

THE AMERICAN JOURNAL
of
Pharmaceutical
.... Education

THE OFFICIAL PUBLICATION OF THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY.

Volume II

July, 1938

Number 3

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PHARMACEUTICAL EDUCATION

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Published quarterly by the American Association of Colleges of Pharmacy at Lincoln, Nebraska. (Claflin Printing Company). Subscription price \$2.00. Foreign \$2.50. Single copies 50 cents. Entered as second class matter July 1, 1937 at the postoffice at Lincoln, Nebraska under the Act of August 24, 1912. Editorial Office: College of Pharmacy, University of Nebraska, Lincoln, Nebraska. Address all communications to the Editor.

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Professional Education*

JAMES E. CUTLER
Western Reserve University

If one consults the literature dealing with educational matters, which now occupies a large section in libraries, one quickly discovers that professional education as such has received very little attention and consideration. Kindergartens, nursery schools, progressive education, elementary schools, secondary education, industrial and vocational schools, physical education, health education and higher education are familiar classifications. Professional education, on the other hand, appears not to exist at all, or to warrant reference only as to something vague and relatively unimportant.

Yet, on a moment's thought, one recognizes that what constitutes essential preparation for the professions has a basic societal significance, particularly among civilized peoples. The student of societal organization must necessarily concern himself with the evolution of the professions. Secret societies inhere in the societal organizations; likewise do professional groups. With the advancement of civilization and the emergence of science, as opposed to magic, professional groups multiply and their influence and power increase enormously. The various specialized and skilled services that are characteristic of civilization are contributed by professional groups and are largely determined, as to nature and scope, by the standards set by these groups.

If this be true, how may such a discrepancy and the apparent disregard of the subject by educators be explained?

In the first place, there is ample reason for a lack of manifest interest in education for the professions. The general public has no responsible source of information about it and is at the mercy of the advertising quacks who brazenly assert their competence. Those who seek professional services pass judgment on the performance of the practitioners whom they engage but lack adequate means of relating performance to available preparation for practice. Their knowledge is gained through intermittent experience, by the method of trial and error, and no abiding interest on their part is

*Reprinted from the January Educational Record by request and with consent of the Educational Record and the Author.

kindled in the means by which preparation for practice of a profession is gained. How the professional groups are constituted and by what process they perpetuate themselves are matters of little concern. Dramatist and cartoonist find it possible to delineate caricatures that may become conventionalized characterizations, for example, the attorney at law a pettifogger, the family physician a kindly disposed, bearded purveyor of pills who drives a horse and buggy.

In the second place, each professional group struggles with its own educational problems, assuming them to be so nearly unique as to have little in common with those of other professional groups. Even if a professional group has established a school and it becomes a constituent part of a university, its needs and its problems are usually isolated. Since a position of self-determination is expressly desired by this new unit in the university organization, and it is understood usually that its financial needs are to be met without encroaching upon the existing resources of the university, the new unit is treated as if it had nothing in common with other professional schools for which the university may have assumed responsibility. Often fallacious analogies are drawn. Recommendations resulting from studies that have been made of engineering education include emphasis upon the economic aspects of engineering, to the end that the student may be prepared either for a technical career or for business management and economic and social planning. In the field of legal education it is likewise urged that the schools should give preparation for business administration, as well as for the practice of law. Presumably schools of business administration, with equally good reasons from their point of view, might incorporate legal and engineering training in their curricula.

From this assumption of the uniqueness of each professional interest, arise jurisdictional jealousies and divergencies which seriously interfere with the proper development of preparatory training. The essential preparation for admission to the professional schools is prescribed now by this group and now by that, with the result that colleges, junior colleges, and high schools are faced with an impossible task. Herein lies a source of the confusion that is said to exist in the aims of our educational system. To advocate the organization of junior colleges as the chief means of eliminat-

ing confusion of objectives is to overlook a principal factor in the confusion. Junior colleges, in themselves, hold no magic formula for the solution of the problems of preparatory training for admission to professional schools. Nor does the proposal to cast the professional schools adrift from the universities offer even a specious plan for eliminating this source of confusion.

In recent years the Carnegie Foundation for the Advancement of Teaching and the United States Office of Education have both made noteworthy contributions to the advancement of professional education in the United States, but their efforts have been confined almost exclusively to single professional groups and have dealt with the standards maintained by the existing schools in the group chosen for consideration. In the current publication by Russell Sage Foundation of a series of valuable monographs, prepared by Dr. Esther Lucile Brown, dealing with the present status of certain established and emerging professions in the United States, a section of each monograph is devoted to education, the discussion being restricted to the particular profession therein described.

Foundations have made grants to promote professional schools, but usually to self-constituted committees or councils for the study of problems presented in their individual fields of interest. Little or no attention has been given to the field of professional education as a whole. Nor have the educational problems presented in a profession which is in process of differentiation, where the path trod by older professions must be blazed anew, received diligent inquiry and consideration at the hands of any research organization or educational institution. The need for the study of this neglected field of education is indeed urgent—in the public interest, as well as that of the professional groups concerned.

All professional education is concerned with five general objectives:

First, the acquisition of the professed knowledge of a department or division of science or learning. This involves setting admission requirements for the professional school and determining what constitutes proper pre-professional preparation. It is basic for curriculum building in the professional school.

Second, the attainment of an understanding of the practical application of this professed knowledge to the affairs of others, according to the Century Dictionary, "either in advising, guiding or teaching them, or in serving their interests or welfare". This is the distinctly professional part of the curriculum. The content must come from familiarity with and study of the field itself. It is derived from the systematic collection of data from practitioners and the determination of practices and techniques which are effective under certain conditions. In some cases the method of job analysis has been used for this purpose. Teachers who qualify professionally as well as in ability to give instruction, are needed for this part of the curriculum. Freedom from stagnation on a particular level of achievement and meritorious advancement of a profession depend upon the measure of success achieved in seeking this objective for the young recruits.

Third, skill in the practice of an art based upon the professed knowledge and its application. For the professional student there are required to achieve this objective special facilities, related as closely as possible to local current practice, such as laboratories, clinics, wards and departments of hospitals, dispensaries, schools for practice teaching, shops for engineers, public health agencies for public health nurses, social agencies and departments of government for social workers. Facilities of this nature which can be used for the benefit of the beginner in acquiring skill, under competent direction and supervision, are indispensable in professional education.

Fourth, the inculcation of service to others, not to self primarily, as a guiding principle. Personal adaptability for the practice of the profession enters at this point as a qualification for the admission of the student. Professional ethics—ideals, codes of honor, generally accepted employment practices—have their place in professional practice. The interest of the public, of clients, of patients, of pupils, must invariably be held to be paramount by the practitioner who wins distinction.

Fifth, the maintenance of a progressive examining and licensing authority for determining minimum qualifications for admission to practice. Licensure includes the three methods of registration, certification, and licensing. Pro-

fessional organizations, as well as professional schools, are concerned in setting requirements for licensure. At this point the participation of professional groups has a determinative influence; their participation may restrict, or it may foster and promote, the efforts of the schools to add further professional distinction to the already achieved. It is the function of the schools to improve professional education to the end that the performance of the practitioners may be improved. Much depends upon the leadership that is present in the professional organizations—the academies, the bar associations, the societies, the federations and other professional associations—in striving to achieve this objective.

A profession has its origin in a specialized service which undertakes to meet a generally recognized need. The art precedes the science. Then those who engage in this specialized service, or calling, profess to understand and to follow it. The situation in a professional group, when it becomes apparent that an organized educational program for beginners is desirable, seems always to necessitate setting relatively low admission requirements. In attaining the aforesaid first objective (The acquisition of the underlying science or department of knowledge) the problem of raising admission requirements thus becomes a constant and persistent problem in professional education. Since there are always distinguished members of the professional group whose pre-professional qualifications were less than those that it is proposed shall be established henceforth, it is argued that it would be inadvisable to bar from the profession an individual who possesses in so high a degree personal adaptability for successful practice. In the field of legal education, for example, the case of Abraham Lincoln is always cited when an advancement of requirements is under consideration. The objective of personal adaptability becomes confused with that of competency in the domain of the relevant professed knowledge.

Another persistent problem that arises in connection with the formulation of a basic curriculum is specific versus general pre-professional requirements. Shall the requirements be stated in terms of credit units in specified academic subjects or courses of study, or shall they be stated merely in terms of completion of a certain number of years in a graded educational system, or perhaps graduation from

secondary schools or colleges, with or without a stated minimum rank in class work? This problem awaits general investigation and study. At present each field of professional education pursues its own way independently and no one knows whether the formulation of a general policy would be advisable, although vigorous protests against the requirements of some of the professional schools have been voiced by academic authorities.

In how far the curricula of the schools in one professional field should be standardized is another problem of general import. Standardization would facilitate the transfer of professional students from one school to another. Is the transfer of students desirable in professional education, or should they remain for graduation in the school where first admitted? Should professional schools admit special students without reference to candidacy for graduation? What is the significance of building a professional curriculum to conform to an academic system of credit units, however much it might facilitate student transfers? Is it possible to achieve the aforesaid third objective, skill in the practice of an art based on the application of the professed knowledge, if a considerable amount of standardization is introduced or if student transfers are encouraged? In how far should conformation to pattern in the professional school be permitted to modify the objective of providing and utilizing to the uttermost the available facilities for training skilled practitioners? Is the art of the profession to be taught through carefully planned practice work or through practice under actual working conditions with competent supervision and direction, or through a combination of both?

There is the question also of reliance upon a plan of internship appointments, following graduation from the professional school, versus assumption of full responsibility by the school itself for the acquisition of sufficient skill to warrant admission to practice. These are questions which are being answered at the present time in particular fields of professional education without adequate general information available for guidance.

It is a fair presumption that an obligation rests upon the professional school to afford an opportunity for the experienced practitioner to keep up to date in his practice. The programs often arranged for this purpose by professional or-

ganizations, even the consistently planned programs of the Academies of Medicine, presumably need to be supplemented in any rapidly advancing professional field by systematized effort on the part of the schools. An equivalent of what has been done for teachers-in-service is perhaps highly desirable for other professional groups. Haphazard efforts to supplement the initial preparation of the practitioner would no doubt be more effective, and in the end more constructive and helpful, if made in the light of a wider perspective.

The proper form of the degrees to be conferred by the professional schools has not yet been determined in the United States. Shall it be a bachelor's degree or a master's degree, or the doctorate? Shall a professional school use one form for the first degree and undertake to confer another form as an advanced degree? A complete lack of uniformity prevails at the present time. In law a bachelor's degree is conferred as a first degree, while in medicine it is the doctorate. In engineering the field of specialization is indicated in the bachelor's degree that is conferred, while in medicine the doctor's degree, and in dentistry also, is used indiscriminately with no indication of the field of specialization. The City Directory and the Classified Telephone Directory, for instance, are useless as guides to those who may be in urgent need of specific medical care and are seeking the services of those in the profession best qualified to give it. In education for the ministry the bachelor's degree is conferred as a professional degree and the degree of Doctor of Divinity has become an honorary degree for the clergy. The plight of the Protestant clergy in this respect is most unfortunate. They desire to serve congregations the members of which like to refer to their pastor by attaching the title of doctor to his name. Advancement professionally means that they must perforce become receptive candidates for the honorary degree at the hands of some friendly and well-wishing college or university. In the newer professional schools it is common practice to use the master's degree as the first degree. Where extensive specialization has entered the practice of a profession, as is notably true in some of the older professions, the pressure is strong to establish a variety of degrees. All of which is very confusing to the public in general and constitutes an apposite subject for consideration by educators.

Whether it is possible to eliminate the esoteric element that seems to be inherent in professional education and whether that would be desirable even if possible, are questions that do not fall within the limits of this discussion. The present purpose is to direct attention to the fact that while some excellent studies have been made of the education of practitioners in selected professions, nothing at all comparable has been done with reference to professional education as a whole. It is suggested that professional schools have much more in common, that their interests and problems are more nearly identical than is generally thought to be true, and that in the interests of public welfare a new approach to the administration and promotion of these schools is desirable.

Professional schools are now in a large measure under the jurisdiction of universities and their administration has been accepted as a university function. More than budgetary supervision is involved in their administration. Not a little of the research that is sponsored by universities for the advancement of knowledge and of human welfare is carried on in the professional schools. These schools constitute an integral part of the higher education for which universities are maintained and to which the public is asked to give support. Their proper support as a part of the university organization and their well-considered administration are fully warranted by the societal significance and importance of the services they render. Professional education merits study from the point of view of the modern university and it is to be hoped that the necessary interest, understanding, and perspective will not be lacking. Research, vision, wisdom, and cooperative effort are required to find the best possible solution for the common problems that are inherent in the advancement of professional education.

Some Educationally Significant Features of the Pharmaceutical Personality

W. L. VAN BUSKIRK
Philadelphia College of Pharmacy and Science

In view of the present tendency of everyone to psychologize about everybody and everything, it occurred to the writer

that no great harm could be done were a psychologist to do a bit of psychologizing about the sort of person who is preparing to enter the profession of pharmacy. On the contrary, it might add considerably to the effectiveness of our instruction were we able so to organize our courses as to appeal to the major interests of those benighted souls who must contrive daily to keep awake through several hours of pedantic droning from the rostrum.

Fortunately, in outlining the chief interests of our students, we are no longer confined to the unscientific methods of the arm-chair philosopher. To the study of personality, the psychologist has extended the principles involved in the widely-known so-called intelligence test. Although such test methods fall far short of the desired perfection, they are vastly superior to the uncontrolled observations and inferences of the self-styled psychologist who bases his judgment of what is on his idea of what ought to be.

The measurement of personality involves, first of all, finding within a given personality, general functions that are common to a great many personalities. Such functions must be universal enough to provide a basis for the comparison of one person with another.¹ The field of interests seems to fulfill this requirement and has served as one point of departure in the construction of personality tests.

The test used in the present study is based on Spranger's six-fold classification of the interests experienced by men.² This is a brilliant a priori analysis which assumes that the personalities of men are best known by their interests or evaluative attitudes. There follows a brief description of each of the six broad interests measured by the test. These descriptions are condensed from those given by the authors of the test³.

1. **The Theoretical.** The dominant interest of the theoretical man is the discovery of truth. He looks for identities and differences; he disregards judgments of the beauty or

¹This is a limitation of all psychological tests. The score attained by an individual on a test is an indication, not of so many absolute units of whatever the test measures, but of the relative rank position of that individual among the individuals on whom the test is standardized.

²Spranger, Edward. *Lebensformen*, 1928. American agent, G. E. Stechert.

³Allport, G. W. and Vernon, P. E. *A Study of Values. Manual of Directions*. Houghton-Mifflin Company, New York.

utility of objects; and he seeks only to observe and to reason. His chief aim is to order and to systematize his knowledge. He is frequently a scientist or a philosopher.

2. **The Economic.** The economic man is primarily interested in what is **useful**. This interest develops from the satisfaction of bodily needs to embrace the practical affairs of the business world. This man wants education to be practical and regards unapplied knowledge as waste.
3. **The Aesthetic.** The aesthetic man sees his highest value in **form and harmony**. Each experience is judged from the viewpoint of its grace, its symmetry, or its fitness. He finds his chief interest in the artistic aspects of life.
4. **The Social.** The highest value for the social man is **love** of people, whether filial, friendly, conjugal, or philanthropic. He is kind, sympathetic, and altruistic.
5. **The Political.** The chief interest of the political man is **power**. His activities are not necessarily within the narrow field of what we call politics. He wants to be a leader of men. Many philosophers hold this to be the most fundamental of motives.
6. **The Religious.** The religious man's highest value is **unity**. He is mystical and seeks to comprehend the cosmos as a whole, to relate himself to its embracing totality. He is primarily interested in the meaning of life.

To illustrate how these six basic interests influence our reactions to various situations in daily life, let us consider the way in which each of the interest types might think of or otherwise respond to an automobile. The man whose dominant interest lies in the **theoretical** values would above all things consider an automobile as weighing so many pounds, or as being made of so much steel and alloy. The **economic** man, on the other hand, would respond to the automobile in terms of its marketability and its utility in the production of wealth. To the person with a dominant interest in **aesthetic** values, the automobile would be a thing of beauty. He would value the harmony of its lines and the richness of its color. The **social** man would regard it primarily as a means of providing pleasure to people, as a means of promoting friendship and love. For the **political** man it would be a

possession indicative of his power of purchase which in turn demonstrates his power to get his share of the world's goods. Again, by employing the psychological device called projection, he might gain great satisfaction from thinking of the automobile's power as an extension of his own resources, giving him some control over time and space, thereby mitigating their limitations on his own activities. Or he might regard it as an instrument through which he could extend his influence over people by obligating them to him for rides. Finally, the person of great **religious** interest might conceive the automobile as a manifestation of the immense accomplishment made possible because of man's inspiration by divine intelligence.

It is not to be inferred from this discussion that a given man is actuated exclusively by one or another of these types of interest. In every personality all six of these interests exist, usually in varying degrees of prominence. Anyone of us might value an automobile in all of the ways outlined above; but one or a few ways would tend to dominate our reactions and the other ways of regarding it would be merely secondary. Thus the man in whom this economic interest is foremost would be influenced primarily by the use to which the automobile could be put; but his attitude toward it might also be influenced in varying degrees by its beauty, by the facts about the materials of which it is made, by its value as a social instrument, by its value as an expression of his power, or by its significance as a symbol of the meaning of life. It has been shown, however, that in any given individual one or two of these interests stand out as more powerful than the others. These outstanding interests exert more effect on his reactions than do the others and color his experience accordingly.

The Allport and Vernon Study of Values Test, which measures these six interests, was given to 77 male students of pharmacy who were enrolled in the author's course in general psychology. The group is fairly representative of the general pharmacy student body insomuch as no selective factor was known to be operative, the course in psychology being required of third-year students at the time that the test was given. The scores of the female students were not considered in the treatment of the results, because it has been shown that the test reveals very significant sex differ-

ences. As we had too few female students to treat their scores with statistical reliability, it was decided to confine our discussion to the males. Consequently, any generalizations that we draw from our results can be applied only to male students of pharmacy. Moreover, since the sample was drawn from only one college of pharmacy, it is possible that the results may not be representative of male pharmacy students in general. What is to be said about the personality of the student of pharmacy as a result of this study should, strictly speaking, be regarded as valid only insofar as the student body at the Philadelphia College of Pharmacy and Science is representative of the student bodies of other colleges of pharmacy. Because the writer's experience is limited to one college of pharmacy, he leaves the extension of his generalizations to his readers who, no doubt, have a much more inclusive knowledge of such colleges.

The test, once given, was scored to determine the strength of each of the six interests for each student. This being done, the average strength of each of the interests in the group as a whole was computed and its reliability determined by the computation of the standard error of the mean.

In order to determine whether the dominant interests of pharmacy students differed from those of non-pharmacy students it was necessary to find some standard of comparison. Happily, several reports of the results of this test are to be found in psychological journals. Only two studies, however, could be found in which the statistical constants necessary to our computations were reported. The study that was selected for comparison was the larger of the two in the number of subjects used⁴. This is a report of the average interests of 279 male sophomores at Dartmouth. The group included 110 students of business administration, 21 students of banking, 45 students of medicine, 21 students of education, 33 students of law, 18 students of literature, and 31 miscellaneous students. The average scores for the six values of our group and of the comparison group are given in Table I which follows.

⁴Cantril, H. and Allport, G. W. Recent Applications of the Study of Values. *Journal of Abnormal and Social Psychology* 1933, Vol. 28, p. 259-273.

TABLE I

MEANS AND STANDARD ERRORS OF THE SCORES OF THE TWO GROUPS						
	Theoretical	Economic	Aesthetic	Social	Political	
77 P.C.P. & S. males						
Mean	*32.71	32.74	*24.21	*32.51	33.03	27.97
S.E. (M) ..	.76	.48	.70	.58	.63	.95
279 Dartmouth males						
Mean	29.67	32.14	30.37	30.18	31.99	25.66
S.E. (M) ..	.43	.58	.56	.33	.43	.55

To determine the interests in which the pharmacy student differs markedly from the non-pharmacy student it is necessary to find the difference in strength of each of the interests in the two groups. Table II presents these differences.

TABLE II

DIFFERENCES

	Theoretical	Economic	Aesthetic	Social	Political	Religious
Differences..	3.04	0.60	—6.16	2.33	1.04	2.31
S.E. (diff.) ..	.87	.75	.89	.67	.76	1.14
C. R.	*3.38	.80	*6.92	*3.33	1.37	2.03

Explanation: In row 1, labeled differences, in the appropriate column, is given the difference between the average score of the pharmacy student and that of the non-pharmacy student for each interest. These differences were obtained by subtracting the scores of the comparison group from those of the pharmacy group. The minus sign in the aesthetic column indicates that in this interest the comparison group was superior to the pharmacy group. In the second row, labeled S.E. (diff.) are given the standard errors of the differences; and in the third row, labelled C.R. are given the critical ratios of the differences. The critical ratio is obtained by dividing the difference by its standard error. It is a statistic that indicates the reliability of a difference. To be considered reliable a difference must be three times its standard error.

Inspection of Table II shows that the student of pharmacy deviates significantly from the non-pharmacy student in three of the interests; theoretical, social, and aesthetic. His most significant deviation is his lack of interest in the artistic episodes of life. In order to give the reader a more objective picture of the significance of these differences, it may be said that in the theoretical interest the C.R. of 3.38 indicates that the chances are 999 in 1000 that the

difference is a real one. The same may be said for the C.R. of 3.33 in the social interest. Finally the C.R. of 6.92 in the aesthetic value indicates a probability of more than a million to one that the difference is a true difference.

Such, then, are the outstanding interests in which the pharmacy student differs from the non-pharmacy student. We must remember, however, that as a student the pharmacist may have much in common with other students and that the interests he has in common with other students may be more influential in his personality than are those in which he differs from others. Inspection of Table I confirms this observation, for the dominant interest of the student of pharmacy is the political value in which he does not differ significantly from other students. Next in prominence is the economic interest, another value in which the pharmacy student does not differ significantly from other students. Next in rank for the pharmacy student come two interests, in which he does differ from the non-pharmacist. These are, in their proper order, the theoretical and the social interests. Next in importance is the religious motive, and very significantly least in importance is the aesthetic interest.

From this mass of statistical confusion is it possible to draw any inferences that have educational significance? It seems to the writer that the situation is not so hopeless as it may appear. The results in Table II indicate that in certain respects the student of pharmacy possesses a general pattern of interests that differs from the pattern of interests of students in general. As we have remarked, the most obvious difference is his lack of aesthetic interest. This is accompanied by his greater interest in the theoretical and the social. The work of Professor Edward K. Strong, Jr. of Stanford University in the field of vocational interests has shown very convincingly that an individual's likelihood of success in his chosen occupation is determined in a large part by his possession of certain extra-vocational interests that are compatible with the interests of men who are notably successful in that occupation. If Strong's thesis be valid, it follows that a test such as the one used in the present study might be used very successfully as one means of selecting students who are to be trained in pharmacy. In this respect, however, it is highly probable that the use of

Strong's Vocational Interest Blank would be much better than the use of the Study of Values Test. The difficulty lies in the fact that Strong's test has not been standardized for pharmacists and that such standardization would be a good year's work for any man.

A helpful hint for the man who teaches non-pharmacy groups as well as pharmacy groups is that the pharmacy group is more susceptible to appeal in terms of the theoretical and social values than are the non-pharmacy groups. An attempt to interest the pharmacist in a given subject by selling him the idea of desiring knowledge of that subject for its own sake would be more likely to be effective than such an appeal would be to students in general. Interpretation of a subject in terms of its ability to help him help others would also have greater appeal for the pharmacist than for students in general.

Enough for the educational significance of the differences between pharmacists and students in general. Let us turn now to the ways in which the interests of the pharmacist himself may be turned to our advantage in teaching. The first and the most valid inference that can be made is a negative one. The least effective way to get a pharmacist interested in a subject is to appeal to him in terms of the beauty or the artistic aspects of the subject. Calling his attention to the perfection of the prose in which a subject is expressed or emphasizing the contributions that a subject may make to the increase of beauty in the world leaves the pharmacist cold. In view of the fact that this condition may be deplored by many pharmaceutical educators, the writer wishes to remind his reader that a psychologist is responsible for reporting **what is** and that his being a psychologist does not qualify him to assert **what a pharmacist ought to be**. He has no intention of fostering a discussion as to whether more time should be given to the arts in the crowded pharmacy curriculum.

Another inference from the results is that the strongest appeal that can be made to the pharmacist lies in showing him how the subject in question can help him attain power, particularly, power over others. His most vital interest is the political value. His interest in any lesson can be most easily aroused by a demonstration of the ways in which the principles involved in the lesson may be applied to the satis-

faction of his urge to increase his influence over other persons. Any interpretation of the subject matter that shows him how to add to his prestige will have considerable effect in stimulating his study of the lesson. An excerpt from one student's term report in psychology serves well to illustrate this point: "Any high grade moron knows the study of pharmacy to be chiefly of a theoretical nature, yet my score on this interest is very low. My political interest, on the other hand, is very dominant, and this intense urge to power is, in all probability, the driving force behind my actions. . . . In fact the very reason for my studying pharmacy can be explained by it. The power I seek consists of dictating to the many and at the same time gaining their respect. The vehicle of dominance which best suits my purpose takes the form of operating a large trading establishment, etc." Here indeed is a fine example of the dynamic force of one dominating interest.

Two other strong interests of the pharmacists are the economic and the theoretical. This fact indicates the advisability of teaching him science in such a way as to emphasize two somewhat conflicting points of view. Undoubtedly the pharmacist will be interested in science for its own sake. He can be sold on the idea that the ultimate aims of science are the discovery of truth and the systematization of knowledge. On the other hand, his economic interest is slightly greater than his theoretical interest; and it follows from this fact that in teaching him science, one should not neglect the viewpoint that the ultimate justification of science may lie in its use in the production of economic wealth and in the comforts and pleasure derived from such production. Moreover, we may elaborate effectively the economic justification of science in terms of its social utilities. This is indicated by the pharmacist's interest in the social values.

What has been said of teaching science applies with equal force to teaching other subjects. Even the professor of English may use advantageously those three interests that seem to dominate the activity of the pharmacist. He may present the forceful use of language as a means of dominating others, he may interpret the clear and precise use of language as a tool in the acquisition and communication of truth, and he may emphasize the value of good usage in promoting the student's economic welfare. He may treat literature as

the study of certain kinds of truth that cannot be revealed by the methods known to science, he may emphasize the economic and social values of a cultural background, and he can surely present a wealth of evidence to the effect that the world's literature is the greatest single influence in determining the customs, mores, folkways, and thinking of our modern everyday life. It is conceivable that by the use of such devices he might even develop, indirectly, an interest in the beauty of literature itself, an interest in which the pharmacist seems markedly deficient.

The imaginative reader will no doubt be able to supplement these hints as to general teaching procedures with specific examples and techniques that apply to his particular subject. A word of warning should be given at this point. The inferences drawn from this study are useful in appealing to pharmacy students as groups. They constitute very general appeals that may be used in getting groups of students to put forth more effort in our subjects; and thus they make for economy of effort on the part of the teacher. Any given individual student may have a pattern of interests that differs significantly from the norm, and for him the relative strengths of the interests would be changed.

In short, the results of this study apply to classroom instruction and may or may not apply to the individual instruction of a particular person.

The Aims of the Applied English Courses

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The three courses in English that make up a year's work for first-year students in the College of Pharmacy are those required also in the Colleges of Agriculture and Engineering. Their purpose is primarily functional, that is, fundamentals of English composition are presented in relation to writing demands which will be made upon these students in their subsequent professional courses, and still later in the active practice of their professions.

Before discussing in some detail the aims and objectives

of these first-year courses, it is desirable to call attention to the place and the extent of English in the curricula. The situation is the same throughout the country. In most schools offering these professional curricula, a very small proportion of the time in the whole four years is allotted to this very important subject, though educators in all these fields stress the contribution of courses in English in the later college years. As the first-year English courses must usually suffice for formal training, heavy demands are therefore made upon them. They must bear the cultural load as well as bring the writing skill of the students up to a standard that will assure their presenting acceptable papers under all circumstances when they are upperclassmen. In other words, the first-year formal English courses are expected to teach students to proceed under their own power and always maintain the acceptable quality of writing which they have achieved under guidance. Yet obviously, the lack of constant practice in writing in the later college years brings down the quality of the average student's writing in spite of sound basic training in composition in his first year.

Another factor that must not be overlooked when considering English for students in applied sciences is the actual physical effort that any kind of writing requires even for the most interested. It is too often ignored. Under the best of circumstances students taking a curriculum in an applied science have only a limited time at their disposal; hence they can be expected to further their study of English only in basic principles and practice. It would seem good pedagogy to have them understand clearly and handle competently a few essential techniques of writing rather than confuse them by unapplied, abstract principles of composition. The goal of the three courses—the year's work in English for first-year students in the College of Pharmacy, the Ohio State University—is the thorough understanding of a few principles (simple, effective, stimulating, basic). The feeling is that the student, being well grounded in them, has the capacity to proceed upon his own initiative in applying the principles of writing after he has completed his formal English training in the first year.

Tersely stated, the formal English courses here have two aims:

1. Utilitarian: to prepare students to meet acceptably

the writing demands of later professional courses, and still later active professional practice.

2. Cultural: to add and enrich the practical, and to inculcate a point of view toward general reading for later adult study and enjoyment.

Both of these aims are influenced by the place of English in the professional curriculum, the attitude of the faculty and of the men in active practice as well as the English teacher's perspective upon his subject and his knowledge of its relation to his students' life and needs. These aims give direction to the selection of course content, the general course procedure, and justify segregated sections. The permanent accomplishment of the aims can be measured by the attitude of the students and the faculty as well as by the quality of writing demanded and achieved in the later professional courses where term papers really carry on or undermine the training of the formal English courses.

In another section of this discussion will be given a detailed account of the content and procedure in the classes for students from the College of Pharmacy. The immediate discussion is concerned with the guiding principles of the courses as a whole—for the limitation of subject matter, the procedure, and segregation.

In so personal a subject as English, the one which is a means of developing the student's personality, every method must be used to stimulate the individual to write acceptably. To students in the applied sciences only professional incentive can justify a study of English—to them a non-professional subject—at a time when they are most eager to attack their recognizable professional fundamentals. This incentive can be best supplied in the segregated section. As far as possible, the students are grouped, therefore, in sections according to colleges. Though theoretically the mixed section, that is, the one that ignores the student's ultimate professional objective, should make for breadth of interest in writing, it seldom accomplishes this result. It makes rather for lack of interest and intolerance which double the resistance to English, an apparently unrelated subject in a professional curriculum. Freshmen are not interested in writing *per se*. For students with a definite college aim, the segregated section shortens the time required to get common ground and unifies the class, but it does not restrict the teaching of

the fundamentals common to all functional writing. English does not lose its identity. All basic principles of the usual college course in English are retained; but the students rather than the teachers are given first consideration. It has the utilitarian slant at the outset, it is true, but upon practical uses can be superimposed effectively and convincingly, the cultural.

The segregated section makes possible, therefore, the motivated teaching of English—English as a professional fundamental. It contributes to the building up of the spirit of professional solidarity. It requires teaching with real skill, for English teachers must have insight into students' needs, attitude, and professional interests; they must make the adjustments and the presentation that will get the best responses and make for the best learning processes. They must have a sense of proportion, and a real understanding of what are the indispensable essentials of English for the student who does not expect to major in English, but who must have a good working knowledge in order to carry on his profession successfully.

The English teaching must be focused, through insight, on the interests and needs of a particular group. It must leave some definite impressions in the minds of the students. It cannot be scattered, addressed "to whom it may concern"—and be constructive. It puts the emphasis in teaching where it belongs,—upon the teacher to gear the material and the procedure to students with marked professional objectives, and to add the indispensable liberal elements that belong to any college English course, and that bring about personal intellectual satisfactions. There is as much need for the teacher to get perspective upon his subject as for students to be convinced of the value of English to them. The manner of approach and of attitude rather than of marked variation in the topics of English covered make up the courses "English for Pharmacy." Teaching of them does not require that the English teacher have a degree in pharmacy, but it does require sincere interest in the aims and objectives of the profession.

Great care should be given, therefore, to the selection of the teacher of English. In his own person, he must exemplify the broadening effect of his subject by his sense of proportion, his tolerance, his insight, his sincerity, and his leadership. He should be made to feel by the faculty of the college

that he serves that he has a part in the basic training of their students,—for English is an integral part of the professional curriculum,—and that they will demand in all their professional courses the acceptable writing which the English courses have built up.

Since the best results from the English courses come when there is cooperation between the Department of English and the college, it is interesting to note some relations between the Department of English and the College of Pharmacy here. First of all, a spirit of good will prevails. The supervisor of the English courses has a seat in the College of Pharmacy faculty, and has become familiar with the writing demands of the later professional courses not only to select the right items for stress in the English courses but also to check upon how well the students have been prepared for the subsequent demands.

The secretary of the college, also the instructor in the beginning courses in pharmacy, has taken as much interest in informing himself upon the English courses as has the supervisor, and the English teacher in learning the writing demands in the curriculum in pharmacy. As a result, he carries on the skills developed in the English courses by the general specifications for papers in his courses, and some of the writing procedures. As the students identify his writing requirements with those of the English courses, their practical and immediate use is demonstrated. Thus he builds up a tradition that English is a professional fundamental. The secretary of the College has attended the luncheon meetings of the entire staff of applied English, participated in their discussion of topics concerning procedure, presentation of materials; thus he not only aids the English teachers in keeping their perspective but also becomes acquainted with their personality. In addition to meeting with the whole staff, the secretary, the supervisor, and the English teacher especially assigned to the sections for students in the College of Pharmacy, meet frequently to confer about particular topics and methods of cooperation on special writing projects both for English and for professional courses.

The librarian of the pharmacy library has volunteered aid to the English teacher in bibliography procedure in connection with the simple research paper, and has provided a shelf in this library for recreational reading. English teachers have been invited to talk before the Pharmacy Club on

such topics as "The Pharmacist in Literature." The Supervisor of English courses interviewed during freshman week all the women entering the College of Pharmacy. These are just a few of the ways in which the Department of English and the College work together.

The significant point to keep in mind in a consideration of functional English is that it is grounded upon the conviction that it is first a means of strengthening professional achievement which, as it grows with experience and understanding, is bound to extend and gather to it the cultural. This development comes only as the social implications of any of the applied sciences deepen with knowledge and love of the chosen branch. As any profession is the shadow of the men who practice it, so the interest and success of students in English are as intense as the active interest and belief of the instructors of the professional courses, and of the leaders in the active practice in English as a professional fundamental. The attitude of the instructors is evidenced through the quality of writing demanded in the professional courses and through their active backing of the formal English courses; the attitude of men in active practice through their writings in professional journals and through their utterances in professional society meetings.

Applied English courses are directed toward a particular goal which has been set because of knowledge of the distinct contribution of English to the professional and personal life of the students. To reach their highest efficiency, there must be concerted effort on the part of the department of English, the college faculty, and the leaders in active practice.

Applied English for Pharmacy Students

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English for pharmacy students is an applied subject, a course in composition with enough literature to hold their interest and to give them tastes for better reading. Furthermore, since classes only meet three hours a week, every item in the syllabus has been gone over carefully, subjected to sound questioning. This must be done, if the student is to get the essential work in composition, enrich his reading, and prepare

himself for proficiency in the professional courses that come later.

At the very beginning of the course in English the objectives of the course are stated and explained. The student is informed that he is enrolled in a course to help him develop more skill in the craftsmanship of writing, to assist him in the discovery of and expressing of ideas, to aid him in the study of the most frequently used form of professional writing—the report.

Also, during the first class period, the texts for the course are announced. The present list includes: Jones, Practice Handbook In English; Hudson, Hurley, Clark, Essays, Models, Materials; Brown, Modern Short Stories, enlarged edition, 1937; and three issues of the Reader's Digest.

Naturally these texts are used to give direction to the course and to supply ample material for sufficient individual drill in the principles of better writing and reading.

To make the most of the three hours a week in the classroom, work starts early to prepare the student for the main writing assignment of the quarter,—a personal experience. This type of subject,—one that could be developed into a paper of 1,000 to 1,500 words, was chosen because it is the easiest kind of writing for the student to undertake.

Furthermore, to make the work seem more vital to the student (and also more interesting) a personal experience is discovered that is associated with the College of Pharmacy. In this way the instructor and the student have a bond in common.

In the preparation of this personal-experience paper, a report in outline form, is required the third week. One class period is used to give assistance on the outline. Additional help is available in Jones' Practice Handbook in English. Likewise, in class and in personal conferences by means of a Friday "laboratory" hour and also through criticism on the shorter pieces of writing, mainly progress reports, numerous suggestions are given for the writing of the first, or rough, draft for the term paper. Then, a little later, more is said about that second, or final draft. At this point a number of questions are asked the student. Is my paper correct in its spelling, diction, and mechanics? Is it clear, concise, and concrete? Is it real, alive, and vital? Has it accomplished what I tried to do? Have I given new slants to old ideas? Have I a good beginning, a strong body, and a surprising end?

In what position would this paragraph be more effective? Does my title make the reader anxious to read what I have written? Questions like these keep stimulating the student as he works, prick his imagination, and prevent his writing from being purposeless and commonplace. In order to prevent the grinding of the long-paper wheels, assignments from Essays, Models, and Materials are read and discussed. The same is true of Brown, *Modern Short Stories*. For students usually like to go places and live with people on the pages of literature; to feel the strong urge of drama or the whimsicalness of an essay.

Finally, so that the student can tie up all the threads of the quarter, he is asked to give his impression of the work covered. This is often asked for in the final examination, where a last opportunity is also given him to show his skill in outlining or his grasp of writing craftsmanship.

In the second English course *Modern Short Stories*, by Brown is replaced by *Arrowsmith*, by Sinclair Lewis.

Assuming that the students are reasonably free from mistakes in the mechanics of writing, work on the assignments of the quarter begins the first week. In place of the 1,000 to 1,500-word experience paper the requirements are three 500-word papers and an outline for a 1,500-word paper that is carried to the fourth sub-division.

Briefly, these 500-word papers and the extended outline are observation reports. First, there is a general observation, of something on or near the campus, such as a paper on the "Model Drug Store" in the pharmacy building. Next, a static observation is called for, and finally a moving observation, such as the operation of a pill-making machine.

Observation is the key note of the quarter, and this holds true for the extended outline. The outline is to be made with the writing of a 1500 to 2000-word observation paper in mind, the outlining to be carried out to the fourth sub-division. As there is to be no long paper, parts of this outline may, if the instructor so desires, be developed in connection with the 500-word papers which are to follow.

Likewise, as the study of the short story rounded out the work in the first course in English, so the study of the novel rounds out the work in the second course.

In the last course in English for the freshman student *Arrowsmith*, the novel, is replaced by *Twentieth Century Plays, British and American*, by Chandler and Cordell.

After a brief statement of the course objectives, writing plans for the quarter are discussed. The assignments include training in the use of the library. The student will have outlining again and become better acquainted with note-taking, footnotes, and bibliography.

For the final course in English the student selects a topic for a simple research from the field of pharmacy, that can be handled in approximately 2500 words. The subject must be timely, interesting, and sufficiently simple for the proper handling in a paper of this length. Efforts are made to foster a stronger desire for worth-while reading and the student is lured into the lanes of literature with such plays as Street Scene, What Price Glory, Private Lives, Journey's End, The Breadwinner, Marco Millions, and The Green Pastures. Where these lanes will lead him, no one knows. Among the short story writers and novelists of the past and present generations a number of pharmacists are well-known. Who has not heard of the Roads of Destiny, by O. Henry, or of Ralph Marlowe, by James Ball Naylor?

With the inspiration from a broader view the teaching of English to pharmacy students is not a dull task. There is a real thrill in hearing one of the students say at the end of the year, "I wish there were more courses in English that I could take."

English Accepted as a Professional Fundamental by Pharmacy Students

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The motivated teaching of English as a professional fundamental has resulted in a change of attitude toward this subject on the part of the student. To the Dean and Secretary of the Pharmacy College, this change has been most gratifying. Not so many years ago, these men found it a rather trying task to be constantly forced to explain to entering students why English was a required subject of the curriculum. They had had, according to their statements, quite enough of it in the high school and had never liked it and never would. They could see no practical value in it

—no aim or purpose in the writing of a weekly theme, first upon this subject and then upon that. There never seemed to be a decent subject among any of those presented to them from which to choose. They had come to college to learn to be druggists and not authors or poets. Today the situation is different. Even if on the opening day, he is not fully convinced of the usefulness of the course, the freshman soon learns from an upper classman and from his pharmacy instructor that a good command of English and the ability to write a good term paper is an asset toward good grades. He quickly recognizes, too, that a poor set of lecture notes or a carelessly got up laboratory report gets him nowhere. His shortcomings are being constantly forced upon him by the instructor when he has to rewrite several laboratory reports because the original ones had not met the requirements of an acceptable scientific paper. It dawns upon him almost insidiously that he might have been mistaken in his previous attitude and that after all English is not such a useless subject. Everything that he has learned so far has been of immediate use in writing reports or a term paper.

Upon the day of the first meeting of his English class, he found himself surrounded by the same class-mates he had in beginning pharmacy. Everybody is interested in the same thing and to his great surprise he did not even have to leave the pharmacy building, the English teacher came to him, he was still in his own home. Not more than three hours ago in this very room he had taken page after page of notes upon the history of pharmacy. Now he is being told that as an exercise in English he is to turn in an outline of his pharmacy lecture. What is more astonishing, he will receive two grades upon the same paper, one for correct form of outlining, given by the English professor, and one for contents, given by the professor of pharmacy. Apparently the two departments, pharmacy and English, work hand in hand. This morning his first report in pharmacy was returned. There was something very familiar about the red marks decorating the pages here and there, they were the same ones used upon his English paper and he knew what they meant. Evidently he must be as careful in writing up his laboratory reports as he is in writing a report for English.

At the beginning of the freshman year, the student is impressed that there is cooperation between the English and

pharmacy departments. By the middle of the year he is convinced that he must express himself clearly and concisely in all recitations, and that English is not simply English at one o'clock but is still such at four. By the end of the year he recognizes English as a professional fundamental.

From the point of the student the cooperation between the departments of English and pharmacy is entirely satisfactory. From the view-point of the instructor in pharmacy, it is much more satisfactory and gratifying than was the old plan of sending pharmacy students to English classes made up of students from all colleges of the university.

Pharmacy is a professional course and as such demands the writing of professional papers. Such papers have a style peculiar to themselves, a fact that is so frequently overlooked in mixed classes where the students are largely registered in the arts college. The Journal of the American Pharmaceutical Association is constantly printing definite instructions as to the proper editing of papers presented to it for publication.

Segregation into a special group has not resulted in a loss of any of the fundamentally basic principles of English as usually taught to first year students. This fact has been clearly shown in an earlier portion of this paper. This is still more forcefully demonstrated by transfer students from the arts college. As a part of the regular assignments in first year pharmacy, a term paper upon some historical aspect of pharmacy is required of every student as well as a series of six laboratory reports. A comparison of the reports handed in by the transfer student who received his training in English in unsegregated classes with those of the pharmacy student brings to light an interesting fact. No difference at all can be discovered in the historical reports, but there is a remarkable difference in the laboratory reports. Those of the pharmacy student are developed in a systematic and logical order, but those of the former art college student are lacking in acceptable scientific style. The pharmacy student loses nothing, but gains additional training in the segregated class which is not afforded the non-professional student.

That which he has learned concerning the proper style of a scientific report during his first year, seems to be remembered by the student for at least a short period of

time. During the early weeks of the second year a rather lengthy term paper upon the Harrison Narcotic Act is required. Since there is no formal training in English after the first year, a specification sheet is given each student when his paper is assigned. This serves merely as an aid to recall to mind the principal requirements for a scientific report. In this manner the weakening concepts of his first year's English is strengthened by their practical application which now faces him.

This term paper assigned to second year students serves not only as a stimulus to the student to continue to improve in ability to write in a scientific style, but also serves for the supervisor of freshman English as a means in checking for points involved in the writing of a professional paper that need stronger emphasis during the first year. A further purpose of this term paper is training in the collection of all available literature upon a non-experimental minor research problem. The topic is first viewed from many different angles such as historical background, conditions in the United States before the passage of the act, early opinions of authoritative people as to the effect to be expected of the act, the effects as shown by the passing years, and finally a review of the criticisms of the act as given by various authorities. If possible, personal interviews with physicians, pharmacists and narcotic inspectors are encouraged. All this material is then marshalled into proper form and set up according to accepted specifications and presented as the term paper. The grade given upon the finished paper is an average derived from a grade given by the supervisor and instructor of English and upon form, mechanics and display from a grade given by the pharmacy instructor upon contents, accuracy and completeness of detail.

The third year student finds that he is carrying a course based upon current pharmaceutical literature. He must read and abstract a definite number of professional and semi-professional articles found in the various pharmaceutical and chemical journals. In class he is required to give an oral discussion of any of his abstracts that might be selected by the instructor. He is graded upon clearness and manner of oral presentation and also upon form and contents of his abstracts which are turned in at stated intervals. Thus

his English training is carried forward to the fourth year.

A thesis is required of all graduating students. Theoretically at least, the student should now be perfectly familiar with the proper set up of a scientific paper. Experience has shown that in spite of the previous writing of acceptable term papers, after three years of college many students have become careless in their writing. One fact has however been brought to light by a rapid survey of theses written at a time before the segregation of pharmacy students into special classes of English with those written after this separation. Form and style have definitely improved.

Under the present plan of grouping students, the Dean and College Secretary no longer find it necessary to force students to study English. Many requests are received for permission to take advanced English whenever schedules permit as an elective. Applied English courses are directed towards a particular goal which has been set out of knowledge of the distinct contribution of English to the professional and personal life of the student. To reach the highest efficiency, there must be concerted effort on the part of the department of English, the college of pharmacy, and the leaders in active practice. The English teacher must get behind the drug counter and be thoroughly conversant with the interests, desires, and difficulties in the life of the future pharmacist.

Like every new venture, the segregation of professional students into classes distinctive in methods of presentation, was once thought to be impossible and even inadvisable. It is not impossible. Even in universities with general service courses in English it is possible to teach English to students of professional colleges in a motivated manner and in segregated classes without the slightest loss of the so called formal training.

Entrance Requirements*

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A note in the Constitution and By-laws of the 1923 Annual

*Read before the American Association of Colleges of Pharmacy, New York City, August 16, 1937.

Report of the American Conference of Pharmaceutical Faculties reads as follows: "In 1917 the Conference adopted a resolution that a four-year high school entrance requirement become binding upon schools of the Conference on and after September 1, 1923." This requirement went into effect on September 1, 1923. Under Qualifications for Membership in the By-laws as reported in the Proceedings for 1924, we find the following: "Evidences of satisfactory completion of four years of high school work or its equivalent." We operated under this provision without any change for many years. Revision of our qualifications for membership accepted in 1935 carries this statement: "Evidence of satisfactory completion of four years of high school work or its equivalent, which is of such nature as to adequately prepare him for the work which he is undertaking."

You will note that we have been requiring completion of high school for entrance since 1923, or a period of fourteen years, and during that time our requirement has been very loosely drawn and the graduate of any high school or a student who has the equivalent can be admitted, as far as our Association requirements are concerned, to any college of pharmacy holding membership in the Association. This means that graduates of our best city high schools, in which there are specialists employed for the teaching of each subject, is placed on the same footing as graduates of a small town high school or a township unit high school in which a teacher may be employed for teaching two, three or more subjects. It also means that graduates of a high school that has excellent equipment, including library facilities, splendid laboratory equipment, etc., is placed on the same footing as graduates of a poor high school in which the library consists of the textbooks the students purchase and the laboratory equipment consists, in a great measure, of material picked up at the five-and-ten-cent store. It is very evident that our requirement is so loosely drawn that the students entering our Association colleges may vary a great deal in the preparation that they have before coming to us.

This variation is emphasized when we realize that the school districts are autonomous and the directors are exercising autonomy to the point where such subjects as art, Bible study, domestic science, manual training, band, school orchestra, vocational agriculture, etc. are accepted for gradu-

tion from high school and, of course, accepted for entrance to our Association colleges. Forty or fifty years ago the colleges exerted considerable influence on the high school curricula and the student who thought of going to college was careful to see that he completed the requirements laid down by the universities and colleges for entrance thereto. Today our universities and colleges are exerting little influence on the curricula of high schools and "everything under the sun" is accepted as credit for graduation. Of course, this is reflected in the preparation of the students who come to us.

It is true that the parent organizations of many of our Association colleges specify certain units for entrance, but even here we find that the parent university or college must modify these requirements to suit the curricula of the high schools in the state in which the university or college is located. In the case of my own institution, Purdue University, we specify seven required units of high school work for entrance and require three additional units to be chosen from certain fields, but the remaining five units may be chosen from any other subjects in which credit for graduation has been allowed in the high school. I am quite sure that some of our Association colleges do not even go as far as this but accept graduates of any high school regardless of whether it is a commissioned high school or not.

The average Association college graduates from forty to forty-five percent of the entering students. This means that from fifty-five to sixty percent of the entering students either "fall by the wayside", leave college for financial or other reasons, or transfer to other lines of college work. A great majority of this waste from the pharmaceutical mill "fall by the wayside" because they are unable to carry the work of our Association colleges. This in itself would be bad enough, but the situation is aggravated because any instructor who has a considerable percentage of dull students in his classes, especially in freshman and sophomore classes, will naturally reduce the pace to meet the needs of this slower group. At my own institution I find that instructors in freshman work, in particular, are spending much of their time on the poor students rather than placing the effort where it belongs—on the students who are capable of carrying college work. Are we satisfied with this condition or

should something be done to eliminate the poorer student at the doors of the university?

A student, who pursues a professional course for one or two years and then finds he is unable to complete it, will lose thereby because the professional course he has pursued will be of little or no value to him in life's work. It would be better for this student if he could pursue a college course that included only those subjects that would be of value to him when he left college. Several methods have been suggested whereby this difficulty could be overcome.

The methods in use at the University of Minnesota and at the University of Florida represent efforts to give the poor student, who would not be able to finish a college course, better training for the time he has been in college. However, to my mind these methods are not entirely satisfactory because, as I see it, the program is planned for the poorer student and penalizes the better student by delaying the time when he enters upon his professional work. Many courses given in the General College are very comprehensive in nature and, when the good student enters upon his professional work, he must go back over these general courses and do a more thorough job.

Another method that has been suggested, but I do not know that it is being applied today, appeals to me. It is this: That as soon as a student shows his unfitness to carry the curriculum on which he has entered, he is transferred to a general curriculum similar to that offered in the General College. This method would have the advantage of giving the poorer student training such as he would need in after life and not penalizing the good student. However, it is an expensive method and I doubt that many of our parent organizations would be able to stand the expense involved.

Dr. Hutchins, President of Chicago University, has suggested a method that has some advantages. The method is based on the assumption that every student should be kept in college until he is twenty years of age and should be given at least two years of college work and given some kind of a degree at the end of that time. In fact, President Hutchins suggests that the degree be the baccalaureate degree because that seems to be the most popular degree. Any student who wishes to enter a profession would have

these two years of college work as a foundation on which to build his professional career. In many ways this seems to me to be a very sane way of solving the difficulty.

We at Purdue have been making a careful study for over a year to determine how it is possible to weed out at the very beginning of the college course the student that is unfitted mentally to successfully complete the course in pharmacy. If it were possible to weed them out at the beginning or at least after one semester, then our classes could go at a more rapid pace and our instructors could give more time to the student who is capable of carrying the work successfully. We have attempted to find a selective process that would do this.

One method that seemed feasible was to require the high school to report to us the division of the high school class in which the graduate was placed, that is, in the upper third, middle third, or lower third of his graduating class. We are all aware of the fact that some universities will not accept any student that is not placed in the upper third of the graduating class. The Director of the Division of Educational Reference at Purdue University, Dr. H. H. Remmers, has made a study of this and of the records students made in high school and has come to the conclusion that high school records were quite unreliable in such a selective process. The staff of our School of Pharmacy has reached the same conclusion. It seems that very few of our incoming students are placed in the lower third by the high school authorities. I am inclined to believe that the lower third becomes the lower tenth. Furthermore, a student in the middle or lower third of the graduating class from a **good** high school may be better prepared to carry our work than a student in the upper third of the graduating class from a **poor** high school. In the study we have made of the students entering Purdue School of Pharmacy since 1931, we have found that only one student reported in the lower third of his graduating class has successfully completed our work. We know this student, who is now a graduate and as far as we are concerned, it would have been better for the school and perhaps for pharmacy if he had been failed in his freshman year. From these facts we would be led to believe that if we excluded the lower third in each class graduating from high school, we would be taking a step

toward bettering the situation. Over against this fact, however, we find that a goodly number of those reported in the middle third and some reported in the upper third of their graduating classes from high school are unable to carry our work successfully. A careful study of this method of selection has brought the staff of the School of Pharmacy to the same conclusion that was reached by our Director of the Division of Educational Reference, that is, that high school records make a rather poor selective measure of the student's ability.

We have considered trying another method; in fact, Purdue University did try this method but later abandoned it. Every student entering the University is given orientation tests. These include tests in English, mathematics, and a psychological test, and a number of our students also take a test in chemistry. After considering these tests for a number of years, the University decided that all the students that were in the lowest decile, computed on an average of these tests, would be placed on probation the moment they entered the University and, if they did not carry their work successfully, they would be dropped at the end of the first semester. I believe this method worked rather satisfactorily for us in pharmacy. However, there are other members of the faculty of the University who did not approve of this method of handling the situation and who believed that it was a little too severe. Therefore, we abandoned it as a university policy. The staff of the School of Pharmacy has made a survey of the orientation records of the students entering the School of Pharmacy since 1931 and we find that only one student whose average on orientation tests placed him in the lowest decile has been graduated. We know this student and, although he is not a shining light, we believe that he will be a credit to the University and to pharmacy. The staff is contemplating asking the University to return to this method of placing on probation all students entering the School of Pharmacy who have an orientation average that would place them in the lowest decile, such students to be dropped at the end of the first semester if they do not carry their work successfully. I do not know whether the University authorities will accept such a recommendation. A report of our study of high school and orientation records of our students and graduates since 1931 is appended

to this paper. I believe it would be valuable if colleges holding membership in the Association would make a study of this question in hopes that we can find some selective method that will eliminate, at the beginning of the freshman year or at least at the end of the first semester, all those students whose mental abilities are such that they would not be able to carry the pharmacy curriculum successfully. If such a selective method could be found, much time and effort now wasted by our instructors on poor students, the delay of progress in our freshman classes, and much time and effort wasted by poor students in attempting to do something they cannot carry to completion would be conserved. I believe that this subject is of sufficient importance that our Committee on Curriculum and Teaching Methods be instructed to study the question and bring in a report at our next annual meeting, or that a special committee be appointed to give it careful study for a year.

The following tables give:

1. Serial number of student.
2. High school rating as presented to our registrar from the high school principals. "U $\frac{1}{3}$ " indicates in the upper third, "M $\frac{1}{3}$ " in the middle third, and "L $\frac{1}{3}$ " in the lower third of the graduating class.
3. Results of our orientation tests.
4. The scholarship index as calculated from the grades received by the student. A scholarship index of 6 indicates a straight honor student; 5 indicates between 90 and 100; 4 between 80 and 90; and 3 between 70 and 80.
5. States whether the student has dropped out of college, is in college, or has graduated.

The reader will note that there is some correlation between the orientation tests and the scholarship index but that there is less correlation between the high school rating and the scholarship index.

The author of this paper believes that neither of these criteria (orientation grades or high school rating) can safely be used in eliminating the poor student who applies for admission to pharmacy colleges. He believes, however, that these criteria, and especially orientation tests, are of great value in aiding the dean in giving proper advice to beginning students.

CLASSES ENTERING IN 1931 AND 1932

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Psy.	Math.	Av.		
26	M $\frac{1}{2}$	55	12	15	13	24	1.64	Out.
2	L $\frac{1}{2}$	14	38	21	21	23.5	1.77	Out.
18	M $\frac{1}{2}$	50	12	3	40	26	2.05	Out.
19A	L $\frac{1}{2}$	17	10	2	2	8	2.06	Out.
31	L $\frac{1}{2}$	22	14	56	30	30.5	2.32	Out.
32A	M $\frac{1}{2}$	10	22	3	15	12.5	2.51	Out.
11	.....	64	19	42	10	34	2.57	Out.
7A	U $\frac{1}{2}$	8	52	30	17	27	2.66	Out.
7	M $\frac{1}{2}$	18	14	11	16	15	2.68	Out.
30	M $\frac{1}{2}$	39	44	9	40	33	2.73	In college.
6A	M $\frac{1}{2}$	56	17	15	20	27	2.80	Out.
25A	M $\frac{1}{2}$	3	28	22	10	15.7	2.95	Out.
29	U $\frac{1}{2}$	5	15	17	33	17.5	2.89	Out.
29A	M $\frac{1}{2}$	5	29	7	17	14.5	3.04	Out.
6	L $\frac{1}{2}$	65	17	16	36	33	3.05	Out.
24	M $\frac{1}{2}$	1	31	6	32	17.5	3.10	Out.
33	U $\frac{1}{2}$	62	58	23	30	43	3.23	Out.
10A	.....	9	61	57		42.3	3.26	Out.
15	U $\frac{1}{2}$	60	89	64	52	66	3.27	Out.
21	M $\frac{1}{2}$	35	30	30	30	31	3.35	Out.
12	U $\frac{1}{2}$	46	22	14	10	23	3.37	In college.
16A	M $\frac{1}{2}$	4	37	21	8	17.5	3.42	Grad. (4 $\frac{1}{2}$ yrs.)
25	M $\frac{1}{2}$	31	48	62	37	44	3.44	Grad.
4A	M $\frac{1}{2}$	5	34	2	4	11.3	3.47	Out.
3A	M $\frac{1}{2}$	24	25	18	34	25.3	3.55	Out.
13A	U $\frac{1}{2}$	46	68	44	9	41.8	3.56	Grad. (4 $\frac{1}{2}$ yrs.)
14A	M $\frac{1}{2}$	3	12	58	4	19.3	3.56	Grad.
21A	M $\frac{1}{2}$	0	0	3	7	2.5	3.56	Grad.
17	U $\frac{1}{2}$	90	73	69	79	78	3.58	Grad.
1A	U $\frac{1}{2}$	19	93	55		55.6	3.63	Grad. (4 $\frac{1}{2}$ yrs.)
9A	L $\frac{1}{2}$	3	31	0	8	10.5	3.65	Grad.
1	M $\frac{1}{2}$	56	34	12	8	20	3.66	Grad.
19	U $\frac{1}{2}$	60	57	75	0	48	3.67	Out.
3	U $\frac{1}{2}$	2	8	6	16	8	3.72	In college.
15A	U $\frac{1}{2}$	9	78	40	17	38	3.73	Grad.
31A	M $\frac{1}{2}$	8	17	1	2	7	3.74	Out.
4	U $\frac{1}{2}$	35	18	10	8	18	3.74	Grad.
5	.....	44	6	4	16	7.5	3.75	Grad.
8A	U $\frac{1}{2}$	19	29	21	70	34.8	3.75	Out.
27	U $\frac{1}{2}$	33	72	62	71	59.5	3.77	Grad.
11A	U $\frac{1}{2}$	16	24	13	9	15.5	3.83	In college.
28	U $\frac{1}{2}$	13	12	16	4	13	3.84	Grad.

CLASSES ENTERING IN 1931 AND 1932 (Continued)

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Pay.	Math.	Av.		
23A	U $\frac{1}{4}$	70	65	75	41	62.7	3.85	Out.
8	U $\frac{1}{4}$	89	85	66	80	80	3.96	Grad.
32	M $\frac{1}{4}$	34	56	52	45	46	4.04	Grad.
12A	—	52	38	34	22	36.5	4.04	Grad.
2A	M $\frac{1}{4}$	24	66	63	38	47.8	4.06	Grad.
23	U $\frac{1}{4}$	26	33	11	23	25	4.11	Grad.
16	U $\frac{1}{4}$	84	76	75	71	76.5	4.13	Grad.
9	U $\frac{1}{4}$	20	38	6	26	22.5	4.16	Grad.
13	U $\frac{1}{4}$	37	26	41	17	30	4.16	Grad.
10	M $\frac{1}{4}$	61	39	24	49	43	4.20	Grad.
34	—	75	93	28	91	72	4.24	Grad.
22	U $\frac{1}{4}$	80	90	88	84	86	4.26	Grad.
17A	M $\frac{1}{3}$	40	59	47	58	51	4.29	Grad.
27A	U $\frac{1}{4}$	19	65	38	30	38	4.32	Grad.
20A	U $\frac{1}{4}$	38	85	47	84	63.5	4.48	Grad.
18A	U $\frac{1}{4}$	47	84	32	46	50	4.63	Grad.
5A	U $\frac{1}{4}$	44	78	26	74	55.5	4.64	Grad.
22A	U $\frac{1}{4}$	59	98	54	85	74	4.65	Grad.
28A	U $\frac{1}{4}$	70	77	47	98	73	5.06	Grad.
14	U $\frac{1}{4}$	66	91	61	21	60	5.10	Out.
33A	U $\frac{1}{4}$	78	99	96	94	91.8	5.35	Grad.

Total No. in class = 68. No. graduated = 33. Per cent graduated = 48.5.

No. graduated that were enrolled in lower $\frac{1}{4}$ high school class = 1.

No. graduated that were enrolled in lower decile, orientation record = 1.

CLASS ENTERING IN 1933

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Math.	Pay.	Av.		
13	—		7	13	2	7	1.46	Out.
15	M $\frac{1}{4}$		19	32	16	22	2.57	Out.
34	M $\frac{1}{3}$		60	38	55	51	2.65	Out.
27	—		53	28	52	44	2.68	Out.
12	—	66	59	13	34	43	2.77	Out.
9	—		14	17	16	16	2.84	Out.
11	M $\frac{1}{3}$		30	15	10	18	3.13	Out.
17	M $\frac{1}{3}$		71	10	57	46	3.18	Out.
28	L $\frac{1}{3}$		28	1	34	21	3.23	In college.
5	—		37	2	35	25	2.32	In college.
24	M $\frac{1}{3}$		57	17	38	37	3.45	In college.
33	M $\frac{1}{3}$		75	37	68	60	3.51	In college.
7	—		52	57	36	48	3.51	Grad.

CLASS ENTERING IN 1933 (Continued)

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Math.	Psy.	Av.		
35	M $\frac{1}{2}$		50	32	67	49	3.55	In college.
23	L $\frac{1}{2}$		54	53	34	47	3.57	Grad.
20	L $\frac{1}{2}$		32	37	16	28	3.61	In college.
37	U $\frac{1}{2}$		66	59	68	64	3.64	In college.
30	M $\frac{1}{2}$		26	44	31	34	3.67	In college.
29	U $\frac{1}{2}$		75	89	90	85	3.71	Out.
8	U $\frac{1}{2}$		11	11	18	13	3.76	In college.
14	U $\frac{1}{2}$		81	80	53	71	3.78	In college.
6	----		39	9	28	25	3.80	In college.
10	M $\frac{1}{2}$		52	34	61	49	3.80	In college.
4	----		44	9	72	42	3.84	In college.
26	U $\frac{1}{2}$		43	87	63	47	3.84	In college.
18	M $\frac{1}{2}$		78	57	46	60	4.09	Out.
31	L $\frac{1}{2}$		67	68	83	73	4.22	Out.
36	U $\frac{1}{2}$		92	50	92	78	4.23	In college.
3	M $\frac{1}{2}$		9	53	24	26	4.28	In college.
2	----		38	23	64	42	4.45	Grad.
32	U $\frac{1}{2}$		26	26	33	28	4.59	In college.
25	U $\frac{1}{2}$		65	68	63	65	4.60	In college.
22	U $\frac{1}{2}$		51	64	63	59	4.72	In college.
15	U $\frac{1}{2}$		95	59	88	81	4.98	In college.
21	----		97	70	89	85	5.22	In college.
1	L $\frac{1}{2}$		39	43	20	34		Dropped out very soon after entering.
19	----		94	38	9	47		Dropped out very soon after entering.

Total No. = 37. No. out = 11. Per cent out = 30.
No. in lower $\frac{1}{2}$ = 4 (1 out). No. in lower decile = 1 (out).

CLASS ENTERING IN 1934

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Psy.	Math.	Av.		
34	L $\frac{1}{2}$		12	13	51	25	1.32	Out.
19	L $\frac{1}{2}$		34	6	12	17	1.45	Out.
12	L $\frac{1}{2}$		8	4	1	4	1.51	Out.
41	M $\frac{1}{2}$		12	6	6	8	1.87	Out.
24	M $\frac{1}{2}$	1	46	6	42	24	1.89	Out.
6	M $\frac{1}{2}$		10	23	12	15	1.89	Out.

CLASS ENTERING IN 1934 (Continued)

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Eng.	Psy.	Math.	Av.		
8	U $\frac{1}{2}$	51	85	86	70	73	1.90	Out.
3	.....	22	42	87	86	59	1.92	Out.
20	L $\frac{1}{2}$	63	53	55	57	57	1.93	Out.
38	M $\frac{1}{2}$	62	83	47	64	64	2.44	Out.
31	M $\frac{1}{2}$	6	10	19	12	12	2.62	Out.
39	L $\frac{1}{2}$	1	3	2	2	2	2.68	In college.
37	M $\frac{1}{2}$	9	2	3	16	7	2.77	Out.
2	M $\frac{1}{2}$	9	15	70	43	44	2.99	In college.
10	U $\frac{1}{2}$	63	74	55	64	64	2.99	Out.
13	M $\frac{1}{2}$	93	77	86	85	85	2.99	Out.
40	M $\frac{1}{2}$	34	23	8	22	22	2.99	Out.
29	L $\frac{1}{2}$	6	9	24	13	13	3.15	In college.
17	M $\frac{1}{2}$	8	48	29	7	23	3.16	Out.
16	L $\frac{1}{2}$	63	58	80	60	60	3.18	In college.
5	M $\frac{1}{2}$	11	48	36	68	41	3.19	In college.
43	L $\frac{1}{2}$	23	21	4	16	16	3.25	Out.
46	L $\frac{1}{2}$	53	37	38	43	43	3.27	Out.
33	M $\frac{1}{2}$	18	26	1	11	11	3.35	In college.
36	.....	52	79	15	42	42	3.35	In college.
35	M $\frac{1}{2}$	19	7	18	14	14	3.37	Out.
28	.....	11	40	21	34	26	3.43	In college.
18	U $\frac{1}{2}$	42	55	48	48	48	3.44	In college.
45	.....	1	2	6	3	3	3.44	Out.
4	L $\frac{1}{2}$	42	51	29	38	40	3.50	Out.
26	U $\frac{1}{2}$	59	45	22	42	42	3.58	Out.
15	U $\frac{1}{2}$	44	83	30	26	46	3.65	In college.
42	.....	52	19	2	24	24	3.67	Out.
1	U $\frac{1}{2}$	18	9	11	48	21.5	3.69	In college.
14	L $\frac{1}{2}$	2	48	46	16	28	3.80	In college.
11	M $\frac{1}{2}$	78	21	41	64	52	3.93	In college.
44	M $\frac{1}{2}$	84	64	55	67.5	3.93	In college.	
22	M-L	13	60	62	34	42	4.00	In college.
23	U $\frac{1}{2}$	62	61	36	47	47	4.01	In college.
9	M $\frac{1}{2}$	28	11	18	19	19	4.20	In college.
21	U $\frac{1}{2}$	24	34	63	62	46	4.32	In college.
27	U $\frac{1}{2}$	36	54	55	47	48	4.34	Out.
47	U $\frac{1}{2}$	.....	.....	.....	.....	.....	4.52	Out.
32	U-M	40	62	8	37	45.6	4.56	In college.
49	U $\frac{1}{2}$	33	16	34	28	28	4.59	In college.
25	U $\frac{1}{2}$	61	54	66	60	60	4.77	In college.
30	M $\frac{1}{2}$	17	20	47	24	28	4.90	In college.
7	U $\frac{1}{2}$	63	27	69	45	47	5.45	In college.

Total No. = 47. No. out of Univ. = 22. Per cent out = 45.8.

No. reported in lower $\frac{1}{2}$ = 11 (7 out). No. in lower decile = 4 (3 out).

CLASS ENTERING IN SEPTEMBER, 1935

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Math.	Psy.	Eng.	Ave.		
48	L $\frac{1}{2}$		11	2	12	8	1.41	Out.
66	.....		7	23	26	19	1.94	Out.
54	M $\frac{1}{2}$	24	22	31	28	1.99	Out.	
63	L $\frac{1}{2}$	4	11	4	6	2.04	In college.	
53	M $\frac{1}{2}$	12	19	22	18	2.18	In college.	
15	U $\frac{1}{2}$	12	44	25	27	2.28	Out.	
16	U $\frac{1}{2}$	15	54	61	43	2.33	In college.	
17	M $\frac{1}{2}$	0	9	19	9	2.38	Out.	
22	.....	1	14	8	7	2.43	Out.	
5	M $\frac{1}{2}$	3	9	37	16	2.44	In college.	
3	M $\frac{1}{2}$	19	2	0	7	2.60	In college.	
45	M $\frac{1}{2}$		44	37	40	2.60	Out.	
58	M $\frac{1}{2}$	1	1	6	3	2.66	In college.	
40	M $\frac{1}{2}$	42	33	32	38	2.69	In college.	
64	M $\frac{1}{2}$	27	52	69	49	2.74	In college.	
4	M $\frac{1}{2}$	14	11	2	9	2.75	Out.	
27	L $\frac{1}{2}$	6	4	4	5	2.78	Out.	
51	M $\frac{1}{2}$	7	0		3	2.82	Out.	
55	U $\frac{1}{2}$	48	86	89	74	2.82	Out.	
24	.....	21	15	4	13	2.85	In college.	
8	M $\frac{1}{2}$	39	19	39	32	2.89	Out.	
41	M $\frac{1}{2}$	9	13	12	10	2.91	In college.	
44	M $\frac{1}{2}$	2	4	16	7	2.97	In college.	
56	M $\frac{1}{2}$	3	52	75	51	3.00	Out.	
1	L $\frac{1}{2}$	21	26	1	16	3.05	Out.	
46	.....	8	3	22	11	3.11	Out.	
6	L $\frac{1}{2}$	1	27	37	18	3.13	In college.	
14	M $\frac{1}{2}$	9	9	4	7	3.14	Out.	
10	U $\frac{1}{2}$	59	24	53	45	3.16	In college.	
23	M $\frac{1}{2}$	42	34	30	35	3.20	In college.	
2	M $\frac{1}{2}$	24	30	30	28	3.26	In college.	
50	L $\frac{1}{2}$	42	12	42	32	3.29	Out.	
65	.....	64	77		70	3.29	In college.	
21	U $\frac{1}{2}$	19	54	25	33	3.30	Out.	
11	U $\frac{1}{2}$	22	27	41	30	3.33	In college.	
60	.....	16	51		34	3.33	In college.	
61	.....	72	27		50	3.38	Out.	
37	U $\frac{1}{2}$	78	79	60	72	3.41	Out.	
57	L $\frac{1}{2}$	4	52	41	32	3.45	Out.	
9	U $\frac{1}{2}$	1	31	45	26	3.61	In college.	
28	U $\frac{1}{2}$	2	3	1	2	3.64	Out.	
59	U $\frac{1}{2}$	11	56	80	49	3.67	In college.	
18	M $\frac{1}{2}$	7	53	43	34	3.70	In college.	
29	U $\frac{1}{2}$	56	62	47	55	3.70	In college.	
19	M $\frac{1}{2}$	59	38	20	39	3.84	In college.	
25	U $\frac{1}{2}$	86	60	34	61	3.86	In college.	

CLASS ENTERING IN SEPTEMBER, 1935 (Continued)

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Math.	Psy.	Eng.	Av.		
42	U $\frac{1}{2}$		70	77	94	80	3.91	In college.
7	L $\frac{1}{2}$		60	38	26	41	3.95	In college.
13	U $\frac{1}{2}$		32	65	35	44	3.95	In college.
36	U $\frac{1}{2}$			37	61	49	4.00	In college.
43	U $\frac{1}{2}$		54	57	80	63	4.00	In college.
39	U $\frac{1}{2}$		51	14	84	50	4.07	In college.
47	M $\frac{1}{2}$		18	17	38	24	4.25	In college.
52	U $\frac{1}{2}$		7	63	80	50	4.28	In college.
49	U $\frac{1}{2}$		27	57	76	50	4.36	In college.
62	.....		11	69	97	59	4.36	In college.
32	M $\frac{1}{2}$		44	45	24	38	4.40	Out.
38	U $\frac{1}{2}$		48	33	66	49	4.40	In college.
33	U $\frac{1}{2}$		31	41	75	49	4.59	In college.
31	U $\frac{1}{2}$		53	82	80	71	4.62	In college.
34	.....			79		79	4.97	In college.
49A	U $\frac{1}{2}$		36	67	80	61	5.03	In college.
12	U $\frac{1}{2}$	54	61	83	90	74	5.12	In college.
20	U $\frac{1}{2}$		56	67	86	70	5.12	In college.
35	U $\frac{1}{2}$			91	89	90	5.53	In college.
26	.....		63	94		78	5.66	In college.

Total No. = 66. No. out = 23. Per cent = 34.9.

No. reported in L $\frac{1}{2}$ = 8 (5 out). No. in lower decile = 13 (8 out).

CLASS ENTERING IN SEPTEMBER, 1936

Student Number	High School Rating	Orientation					Scholarship Index	Status
		Chem.	Math.	Psy.	Eng.	Av.		
51	L $\frac{1}{2}$			10	21	10	1.45	Out.
67	.....		29	5	7	14	1.69	Out.
57	M $\frac{1}{2}$		7	2	1	3.5	1.92	In college.
29	.....		26	2	20	16	1.95	Out.
65	L $\frac{1}{2}$		39	31	28	30	1.98	Out.
55	L $\frac{1}{2}$		6	43	29	26	2.00	In college.
49	M $\frac{1}{2}$		11	10	38	20	2.07	Out.
7	M $\frac{1}{2}$		77	73	88	79	2.19	Out.
69	M $\frac{1}{2}$		11	13	20	15	2.19	In college.
70	.....		14	48	59	40	2.19	In college.
52	L $\frac{1}{2}$		2	0	0	3 $\frac{1}{4}$	2.29	Out.
74	L $\frac{1}{2}$		15	15	19	16	2.30	In college.
50	.....		1	3	4	3	2.32	In college.
5	M $\frac{1}{2}$	19	2	9	24	12	2.37	In college.
72	.....		12	46	83	40	2.47	Out.
38	L $\frac{1}{2}$	20	43	9	31	26	2.54	In college.
27	U $\frac{1}{2}$		41	45	45	44	2.55	In college.

CLASS ENTERING IN SEPTEMBER, 1936 (Continued)

Student Number	High School Rating	Chem.	Orientation				Scholarship Index	Status
			Math.	Phy.	Eng.	Av.		
24	M $\frac{1}{2}$		0	6	0	2	2.58	In college.
37	M $\frac{1}{2}$		9	10	5	8	2.60	Out.
41	U $\frac{1}{2}$		48	56	92	65	2.63	In college.
4	M $\frac{1}{2}$		28	66	68	54	2.67	In college.
46	U $\frac{1}{2}$		2	40	80	41	2.69	In college.
40	.....		3	4	4	4	2.75	In college.
34	U $\frac{1}{2}$		41	45	46	44	2.87	In college.
25	U $\frac{1}{2}$		49	55	26	43	2.90	In college.
59	M $\frac{1}{2}$		5	8	6	6	2.94	In college.
18	U $\frac{1}{2}$		84	68	60	71	2.96	Out.
10	L $\frac{1}{2}$		44	44	14	34	3.02	In college.
2	L $\frac{1}{2}$		14	23	11	16	3.04	In college.
66	U $\frac{1}{2}$		22	42	42	35	3.09	In college.
42	M $\frac{1}{2}$		8	63	74	48	3.10	In college.
75	M $\frac{1}{2}$		40	65	45	50	3.10	In college.
54	M $\frac{1}{2}$		10	11	15	12	3.28	In college.
48	U $\frac{1}{2}$		53	40	23	32	3.31	In college.
36	M $\frac{1}{2}$		82	31	43	52	3.43	In college.
33	U $\frac{1}{2}$		14	70	74	53	3.49	In college.
64	U $\frac{1}{2}$		33	66	51	50	3.58	In college.
9	.....		42	30	31	35	3.60	In college.
32	U $\frac{1}{2}$		27	76	71	58	3.60	In college.
35	U $\frac{1}{2}$		22	58	75	51	3.62	In college.
14	U $\frac{1}{2}$		70	64	38	57	3.66	In college.
61	.....		54	34	28	38.5	3.66	In college.
31	U $\frac{1}{2}$		34	18	14	22	3.73	In college.
8	L $\frac{1}{2}$		32	26	41	33	3.81	In college.
13	U $\frac{1}{2}$		29	76	53	53	3.83	In college.
1	U $\frac{1}{2}$		46	90	33	72	3.87	In college.
22	M $\frac{1}{2}$		14	16	29	20	3.87	In college.
26	U $\frac{1}{2}$		52	57	90	67	3.90	In college.
30	U $\frac{1}{2}$		9	38	15	21	4.00	In college.
19	.....			76	65	76	4.08	In college.
63	.....		62	50	58	57	4.11	In college.
45	.....		62	52	37	50	4.13	In college.
71	U $\frac{1}{2}$		47	30	21	33	4.18	In college.
47	.....			77			4.21	Out.
23	U $\frac{1}{2}$	43	43	39	47	43	4.23	In college.
56	M $\frac{1}{2}$		22	34	41	36	4.32	In college.
68	.....		13	88	57	53	4.36	In college.
53	M $\frac{1}{2}$		15	10	78	34	4.66	In college.
3	U $\frac{1}{2}$		46	74	33	51	4.81	In college.
11	U $\frac{1}{2}$		66	77	53	65	4.90	In college.
21	U $\frac{1}{2}$		99	86	65	80	4.95	Out.
16	U $\frac{1}{2}$			30	54	42	4.97	Out.
58	U $\frac{1}{2}$		97	96	93	95	5.00	In college.

6	U $\frac{1}{3}$	62	50	37	64	5.17	In college.
43	U $\frac{1}{3}$	56	87	94	79	5.25	In college.
12	.....	20	98	60	56	5.31	In college.
28	U $\frac{1}{3}$	8	91	31	93	5.32	In college.
20	.....	35	79	90	68	5.34	In college.
15	.....	72	96	92	87	5.69	In college.
17	M $\frac{1}{3}$	0	11	4	5		Out.
39	M $\frac{1}{3}$	3	3	2	3		Out.
60	.....	24	23	57	35		Out.
62	U $\frac{1}{3}$	65	38	49	50		Out.
73	.....	1	1	35	12		Just entered.

Total No. = 75. No. out = 11. Per cent out = 14.6.

No. in lower $\frac{1}{3}$ = 8 (3 out). No. in lower decile = 7 (2 out).

A Study of Some Problems in Pharmaceutical Arithmetic Given to Students

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Most teachers and students of Pharmaceutical Arithmetic exhibit an interest in the question of what types of problems present the most difficulty for solution by students in regular classwork, and also in the question of what problem types require emphasis in the teaching of arithmetic.

This paper attempts to throw some light on the answers to these questions by employing, as a basis of study, the results of recitations and examinations given to students during the past year.

The chapter titles of Bradley's Textbook of Pharmaceutical Arithmetic were used as the system of classification by which all problems given to students for solution during the year were identified and classified. This classification was also used in an earlier study of state board examination questions in arithmetic, and happens to be essentially the outline as given in the Pharmaceutical Syllabus.

TABLE A
BASIC TYPES OF PROBLEMS FOR CLASSIFICATION

Type	1	Ratio and Proportion
"	2	The Common System of Weights and Measures
"	3	Relationship of Avoirdupois and Apothecaries' Weights
"	4	The Metric System
"	5	The Relationship of the Metric and Common Systems of Weights and Measures

- " 6 Thermometer Scales
- " 7 Calculation of Doses
- " 8 Reducing and Enlarging Recipes
- " 9 Density and Specific Gravity
- " 10 Weights and Volumes of Liquids
- " 11 Stock Solutions
- " 12 Percentage and Percentage Solutions
- " 13 Dilution and Concentration
- " 14 Alligation
- " 15 Chemical Problems
- " 16 Advanced Commercial Problems

The solution results and other information considered of importance for this study and future studies have been recorded and tabulated. This information for each problem given included for example: the class having the problem, the recitation, problem number, date, the number in the class having the problem, the number of students solving the problem correctly, the number incorrectly, and the like. For comparison the average percentage of the group having the problem, which in some cases is the percentage of the whole class, who solved that type of problem by a correct method seemed to serve the purpose of this study better than a comparison of the actual grades received in recitation or examination. The following tables indicate the comparisons of the types of problems in this respect, the figures for the percentage of the group correct being carried to the nearest whole per cent.

TABLES B, C AND D
"B" "C" "D"

Type of Problem	RECITATIONS			EXAMINATIONS			RECITATIONS AND EXAMINATIONS		
	Per cent of Group Correct	Ranking	Per cent of Group Correct	Ranking	Per cent of Group Correct	Ranking	Per cent of Group Correct	Ranking	Per cent of Group Correct
1	78	5	87	4	79	4			
2	62	11	59	15	61	11			
3	71	9	62	13	70	9			
4	74	7	84	6	75	6			
5	73	8	84	6	74	7			
6	90	1	83	7	89	1			
7	77	6	89	3	78	5			
8	80	4	97	1	81	3			
9	77	6	60	14	75	6			
10	69	10	66	12	69	10			
11	71	9	82	8	73	8			
12	69	10	68	11	69	10			
13	83	2	70	10	81	3			
14	82	3	90	2	82	2			
15	73	8	86	5	74	7			
16	80	4	76	9	79	4			

SUMMARY

1. A total of 701 problems in pharmaceutical arithmetic given to 235 students for recitations and examinations during a school year have been studied and classified by an arbitrary list of problem types.
2. From the results of class work the average percentage of correct method solutions for each group having each type of problem has been calculated.
3. Based upon the average percentage of correct method solutions for each group, the comparative ranking of each type of problem studied has been shown.
4. This study seems to indicate that the most difficult types of problems for solution by students, and those types upon which emphasis in teaching should be placed, are as follows:
 - a. Type 2 The Common System of Weights and Measures
 - b. Type 10 Weights and Volumes of Liquids
 - c. Type 12 Percentage and Percentage Solutions
 - d. Type 3 Relationship of Avoirdupois and Apothecaries' Weights
 - e. Type 11 Stock Solutions
 - f. Type 5 Relationship of the Metric and Common systems of Weights and Measures
 - g. Type 15 Chemical Problems

The Model Pharmacy as a Teaching Tool

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The word model suggests the zenith of perfection as well as an imitation of the real thing. A teaching tool is a teaching device used in any instructional program that has for its purpose the vitalizing of practical education. Such a device should develop principles that strike their roots deep into the philosophy of life and give pronouncements that will invade the consciousness of the student and cause him to realize that the school process is an integral part of the life process and not something detached from it. Professor Kilpatrick gives force to this point in the following expression:—

"Any scheme of education should count itself but a part of the general program of education contemplating the whole of life."

Too many students today suffer from book work. They must have an opportunity to equally see things in the concrete, such experiences help to develop interest in real life experiences. Therefore a model pharmacy equips the student to speak as one having seen and furnishes the teacher the opportunity of practical as well as theoretical supervision.

As a medium for instruction the model pharmacy in the school can be used effectively in almost any phase of the curriculum's requirements, but it lends itself especially to the effective teaching of the practical side of the professional activities. We will discuss just a few of the uses made of the store in Temple University.

Since Temple University won the college competition for the professional display sponsored by the American Pharmaceutical Association this year, we will discuss this phase of the utilization of the store facilities.

We feel that there is no one factor which can better further pharmacy as a profession in the minds of the layman, than the judicious display of the scientific apparatus and medicinal substances which are a necessary part of the equipment and stock of every pharmacy. Probably more harm to the profession has been done by the ostentatious showing of every kind of unrelated merchandise in the stores of the country during the past decade than can be remedied in the next half-century. Firmly believing this, we feature professional display in a required course during the senior year. It is planned to start the work in the junior year in 1938 and continue it through the senior year.

The course consists of lectures, demonstrations by the instructor and practice by the students. During the first semester more attention is given to the theory of display and human-interest appeal. Balance, harmony, color schemes, educational and professional values are featured. Special displays for special events, lighting, interior display and show card writing are studied. Photographs and prints of many kinds of displays are utilized in laboratory work to vitalize the practical instruction. The students are taught the fundamentals of the use of various colored materials which can

be used effectively as background for the major features of the motif which is to be built. Each group of students (usually three) are required to plan their own display, showing a variety of interpretations and expressions in their efforts. They submit their rough draft to the instructor one week before the display is placed in the windows of the model pharmacy. The instructor reviews the proposed display and offers constructive criticism. Displays intended for the store are planned in a similar manner. Displays in cases are installed by the students after the planning of a rough draft on paper. Instruction is also given in the use of the various types of signs and reading notices which help to make the display intelligible to the lay observer.

The procedure followed in planning the display is as follows: First—the student must visualize a certain design. Then a sketch is made on paper showing the rough plan. This consists of a centerpiece or focal point of display. The auxiliary display should have a direct relation to the theme of the centerpiece. Next, a suitable title is selected. Appropriate show cards, well worded and well lettered are planned as a necessary adjunct of the complete display. As to the matter of materials, show globes, bottles and laboratory apparatus is used. Products, dummy packages, posters, cut-outs and other material suitable for display may also be obtained from jobbers and manufacturers.

Student interest was increased by the borrowing of a miniature steamship from a local steamship company. This steamship was made the center of a display suggestive of the distant origin of many of our important medicinals.

This is only one example to show how window displays can arouse the interest of the students to the point that they willingly go beyond prescribed assignments to secure display materials. Place a student upon his own resources and allow his full play for his talents. The competitive nature of the individual in such a situation is so strong that he will do more than is required of him in order to get class approbation. Such a procedure is to be encouraged because after graduation the pharmacist will have to employ all the ingenuity possible in order to compete, not in a class, but in a community.

In order to discourage hastily planned and poorly built window displays, each week they are photographed and at

the end of the term are judged. Prizes are awarded to the group whose display is selected for originality, balance, harmony in color scheme, educational, professional, and human interest value.

The model pharmacy is also used to teach the proper storage methods of medicinal and perishable merchandise.

During the second semester the students are shown the arrangement of the drugs and chemicals used in the compounding of prescriptions. They are taught how to receive prescriptions over the counter and by telephone. The matter of politeness, the professional attitude and the willingness to serve is stressed in every transaction. Taking prescriptions over the telephone is an art. The beginner is frequently confused by the experience and neglects to obtain the physician's or patient's name and makes errors in recording dosage. Prolonged practice has shown to be very much worth while in training the student to be alert and accurate.

Trends, Past and Present, and the Needs of Pharmaceutical Education*

RUFUS A. LYMAN
University of Nebraska

In the March number of the Readers' Digest appeared a series of childhood recollections as stated by a number of distinguished personalities. Jacob Riss relates how when a little boy he came into possession of a silver four-shilling piece, which to a boy of his age and circumstances was synonymous with fabulous wealth. As he stood on a bridge dreaming of what he would buy, he cast pebbles into the water and watched the miniature waves spread toward the shore. As the last hard mass left his hand he realized, but too late, it was not a pebble but his silver coin. He saw it gleam and sink beneath the surface and as it went down there settled over his life a darkness so terrible that even in his years of maturity it could not be dispelled.

Jane Addams had a story. As a little girl she took great pride in the imposing figure of her scholarly and cultured

*Read before the students of the College of Pharmacy, University of Minnesota, April 23, 1938 and published by request.

father as he towered above other men. She, herself, was an ugly pigeon-toed little girl, whose crooked back made her walk with her head to one side. On Sundays she attached herself to her uncle on the way to church so that no one would identify her as the daughter of her handsome parent. But one does not have to be a Jacob Riis or a Jane Addams to experience such recollections. We all have them and we have them, not only in connection with childhood days, but in connection with many other situations and places the sum total of which make up our lives.

And that brings me to Minnesota. I met Minnesota abroad before I met her at home. The place was the convention room of a hotel. The hotel might have been any place in this broad land. The time was shortly after the turn of the century. A man, small of stature, serious and sincere in expression, friendly in disposition, with great dignity of bearing, fought with great courage and against great odds for a higher idealism in pharmaceutical education and practice. It was the germ of idealism that Frederick John Wulling planted in my soul that day, that has been my inspiration and guide through three decades of effort.

If I were to name the outstanding contribution made by Dean Wulling to the profession of pharmacy, I would say dignity and self-respect. These are inseparable and are as essential for the development of a profession as they are for the growth of an individual.

I could easily take the hour to tell you of other contributions that the University of Minnesota has made to the development of pharmacy through the vision of its leaders. I shall quote from but a few of the many who have pointed the way and some of whose words, when we look back more than twenty years, could easily have been declared prophetic. I reproduce in part a letter written under date of July 13, 1917—"I think it is evident that there is no great prospect of increased usefulness and of greater service to society along the lines of the usual work in the drug store. The only escape from present limitations would seem to lie in the field of original research. Most astonishing discoveries have been made in recent years; and there seems to be no reason why other discoveries of great value should not be made by thoroughly trained men in pharmacy. I quite agree that the "vital things to do" to accomplish this, are to

require broader academic preparation and more time for technical training, and to devote more time and attention to the problems of pharmaceutical research. Not many men in any profession are successful in original research, but a few in almost every profession are successful in original research, and why should not thoroughly trained pharmacists be successful?

To raise the profession, schools of pharmacy must train men in large attainments in all branches akin to pharmacy, and must not be satisfied with training merely reputable drug clerks.

I fear I have not said anything helpful to you; but I have said enough, I hope, to show that I would have the banner of pharmacy as of all other professions, enblazoned with the word EXCELSIOR."

Cyrus Northrup,
President Emeritus, University of Minnesota.

Again I quote from a letter written under date of July 17, 1917—

"It seems obvious that standards of both technical efficiency and of general education for intelligence should be raised to the highest possible point which does not involve the loss of professional support.

It seems to me, further, that work in pharmacy should be brought into more intimate relationship with medical investigation, especially in connection with the department of pharmacology in our leading medical schools. Pharmacy ought to be thought of as a developing science and art, and not as merely a form of clever technique.

George E. Vincent.
President, University of Minnesota.

In 1916 President James of the University of Illinois asked me this question. "Why does Columbia University consider a two year high school course sufficient for the study of pharmacy?" Fortunately I had the answer in the words of Doctor Henry H. Rusby, the Dean of the College of Pharmacy of that institution. Here is the answer—"When Columbia took over the New York College of Pharmacy, new moral obligations were placed upon that institution, but no additional financial support was given. It is necessary that we have low entrance requirements in order that we may

get an enormous registration so as to pay expenses." President James reply was an assurance that he would tell President Butler that that was a crime against pharmaceutical education that could not be condoned. About six years later President Marion LeRoy Burton, then lately of the University of Minnesota but now of the University of Michigan, put to me exactly the same question. I gave him the same answer that I had given President James. I, however did add—"That probably President James forgot it." President Burton's reply was—"I shall tell Butler the same thing and I shall not forget it." Years later the scene shifted to the office of the President of the University of Minnesota. I was enjoying Dean Wulling's hospitality. I desired to ask President Coffman a question. Dean Wulling made an appointment for me. I discovered the Dean intended I should go alone. I insisted I have a bodyguard. The President received us cordially. I said, "Mr. President, I represent the American Association of Colleges of Pharmacy. You have been one of our severest critics. I am seeking advice. What do you think our Association should do in order to improve the teaching in our colleges of pharmacy?" His reply came without a moment's hesitation. It was—"Quit trying to determine the efficiency of a college of pharmacy by measuring the amount of air the dean is allotted to breath in an hour in his office and do something for the spiritual growth and the intellectual development of the teachers in the colleges of pharmacy." And finally, let me give you your own President's words as I heard them a year ago in the Hotel Mayflower in Washington before the American Council on Education. He plead for educators both general and professional, to hold to the basic principles in education that have been tried through the years. He also plead for changes but not without applying the principles of scientific experiment which would prove the value of such changes. And then with the words that still ring in my ears he said "I agree fully with the English Association for Education in Citizenship which declares that, 'If democracy is to survive and develop as a living force, our educational system must produce men and women loving freedom, desiring to serve their community, and equipped with the necessary knowledge and powers of clear thinking to enable them to become effective citizens.' It is because I believe in

necessary knowledge that I make a special plea for education that puts lime in the bone, iron in the blood, and organized knowledge in the minds of the youth of this generation."

With this picture that I have painted of the contribution of the University of Minnesota to the improvement of pharmaceutical education and practice, do you wonder that when I received an invitation from Dean Rogers to speak to the students of this University, that I found myself muttering to myself "Another case of carrying coal to Newcastle". But there are people that do not know that there is coal at Newcastle and they never would know it unless someone came from the outside to tell them.

Frederick J. Wulling has a right to say himself, what I have said, but he could not without the charge of bigotry being laid at his door. The Biblical statement that "A prophet is not without honor except in his own country" is just as true today as it was the day it was written.

If you have followed critically what has been said so far, you cannot fail to see that the sum and substance of what these distinguished educators have said may be summed up in the one sentence "The crying need of pharmacy was, and has been, and is, and will be, an adequate educational program." And now, before I turn to other things permit me to bring into the picture the analysis of the needs of pharmacy by another great American. He lived in a certain state, but he did not belong to that state alone. He was a man of such idealism that boundaries of state lines disappeared from his thought and he became a truly typical American. Any state, or all states, might claim him. The year was 1922. The representatives of the colleges constituting the American Association of Colleges of Pharmacy sat in annual convention in a Statler hotel in Cleveland. A stillness of dramatic intensity fell upon the group as a man of small stature but with great dignity of bearing walked up the aisle. In that man the impossible had met its master. Fresh from his latest accomplishment, the carrying of four million men to France when there were no boats to move them, the equipping of four million men with arms when there were no arms to equip them; when the war was over and there were no boats to bring them home, he equipped a great American University in France so that the men might be

better trained to meet the needs of civil life when they could be brought home. And finally, he brought them back and then he returned to the practice of his own profession, that of law, as if he had, like any other man, just completed a day's work. This man was presented to the convention as Newton D. Baker, Secretary of War in the Wilson administration. For thirty minutes Mr. Baker discussed the problems of pharmacy and pharmaceutical education as intelligently as if he were discussing the problems of his own profession. Here in part is what he said: "We can only pick out a certain number of limited fields in which we can have a fairly thorough going education. Now that brings up this problem; young men and young women come to you to be educated in a specialty. Obviously, so far as that specialty is concerned, it is of the highest importance that that educational subject should be soundly given. But if you educated them into perfect pharmacists and left off there, so that they had no contact outside of the narrow circle of the science in which you instruct them, they would not yet be equipped for life, and so the duty upon you as educators, is to find out where the most fruitful contacts are between a well given pharmaceutical education and the rest of the education which is necessary for a rounded and useful, and therefore happy life on the part of those who are the graduates of your institutions?

After all, the hardest problem that a man has when he leaves college is to fit his diploma to life—it doesn't fit automatically. He gets out and life is rectangular and his diploma is round, or his diploma is rectangular and life is round. The process of fitting that diploma to life is probably the most critical and discouraging experience the young have. You can make it easier to fit the diploma, if, instead of having your pharmaceutical education a round education, you have it with antennae (so to speak)—arms that reach out and touch with sympathy the related branches of learning, and that is especially interesting to pharmacists because, after all, pharmacy is a kind of halfway house between research of pure chemistry and the application of chemistry by the medical profession.

You are just in the middle—the research man discovers and the engineer carries it into practice, but the pharmacist is mid-way between those two, and if your students could

have a real, live sympathy with the scientific problems of pharmaceutical chemistry and some sort of sympathetic understanding of the problems which the internal medicine doctor has to deal with—if he could see his own problems in those two points of view he would be a more useful pharmacist.

In addition to that, the pharmacist has to be a citizen. Lawyers and doctors have to be citizens and you can't be a good citizen by being merely a good lawyer or merely a good pharmacist. Sometimes I think the pharmacist has a special obligation as a citizen. He usually has his store on the corner and it is a place where the neighborhood gathers. If he is a man of firmness of character and knowledge, he gets to be a man of influence quite without knowing it, because he is in the center of a village community. It is of the highest importance that, among the subjects with which you seek to inspire your students, shall be those of great public subjects—political questions, if you please—in which the common good is to be worked out by cooperation of citizens.

Of course, I may add too, that one other thing. There is probably no other profession in which the ethical content is so necessarily high as it is in the pharmacist's profession. For a variety of reasons, which you will understand without my enumerating them, the druggist has control of a great set of agents which the weak and frail members of society seek to acquire to misuse, and unless the pharmacist be a man who has a very high moral purpose, unless he can see straight and think clear, he is likely to be a danger to himself and his community.

I have said all that I came here to say. What I came here to plead for was that the Pharmaceutical Faculties should recognize the dignity of their relation to all education, for in this selective age, when it is no longer possible to know everything, the force of circumstances requires that a certain number of young men and women shall bring their natural endowments to you to be trained. If you give them a limited perspective and unsympathetic education and unenlightened skill, merely, then you have not done your whole duty by that priceless thing which those young people have brought you to be trained, but if you give them contact with liberal and enlightening things and if you give them sympathies

of a broad and general character, if you infect them with the consciousness of the fact that they are citizens and have great duties in that regard, and if you underlay all those faculties with a broad ethical and moral basis, showing that character, after all, is the rock upon which both success and usefulness must be established, then pharmaceutical education will assume and maintain the same dignity in the great collection of educational faculties which are sought for and attained by other sciences."

Newton D. Baker took his hat and walked out as unostentatiously as he had come in—but what he said that day lingered in the hearts of men and became the goal for which pharmaceutical educators are striving.

I am certain that the students of the present generation have no conception of what the present educational program has done for pharmacy. In order that you may appreciate what advances have been made, I shall paint another picture. In doing so, I shall confine myself to my own experiences. In this whole discussion I shall not borrow from the experiences of others. I do not need to. What I say to you is out of my own personal contacts. In the language of the law, it is not circumstantial, it is first hand evidence. I talk about nothing but what comes within the range of my experience. If there are any errors, they are in my interpretation. In estimating the importance of evidence, or of historical facts, the human element is always a factor. This I freely grant.

Because of the reasons stated, I shall paint the picture of pharmacy in my own state (Nebraska) as it looked in 1908. It was in that year that circumstances threw me, a medically trained man, in a position which has made my relationships over a period of thirty years, quite as intimate with druggists as with doctors. It was in that year that I was assigned the task of developing a pharmaceutical curriculum in my own university. At that time there were practically no educational standards for the study of pharmacy. The requirements set by the American Conference of Pharmaceutical Faculties, (at that time having a membership of twenty colleges,) was one year of high school, north of the Mason and Dixon line. South of that line it required but an eighth grade preparation. The minimal period of technical training was two years; some institutions

considered eighteen months of school, running consecutively, as satisfying the requirements. Everywhere there flourished cram schools that guaranteed to put a boy, fresh from the stable, by any state board of pharmacy, in a few weeks for a certain sum of money, or it would be refunded. The tragedy of the situation was that they could keep their promise. Few states, Nebraska among them, had laws requiring college training to practice pharmacy. Pharmacy was still in the throes of the apprenticeship system. The important question was "Has the apprentice 'served time' in a drug store?" Whether he had got anything of educational value was entirely immaterial.

When the president of the Nebraska Board of Pharmacy was informed that the Regents of the University had decided to use some of the taxpayers' money for instruction in pharmacy, he exclaimed—"Why in hell did they do that?" When I, the newly appointed Director of the School of Pharmacy, applied for membership in the Nebraska State Pharmaceutical Association, meeting in Omaha, my right to become a member was questioned, although the fourteen year old son of a druggist had just been elected to life membership. His father paid the sum of twenty-five dollars. The morale was low. Professional pride and responsibility, if they existed, were lost in the slough of commercialism and ignorance.

At the first meeting of the faculty of the new school, at which a curriculum was to be adopted, one of the University's outstanding scholars in the most sarcastic language, condemned the Chancellor, the Board of Regents, and the University in general for entering the field of pharmaceutical education. He prophesied that the next step would be the education of barbers and policemen.

As I paint this picture of pharmacy as it was thirty years ago, I would not have you think that the status of the other professions at that time was ideal, especially, as regards standards of education or of commercialism. I am quite as familiar with the inner workings of the medical, the dental, and the nursing professions and the Presbyterian Church of which I am a devoted member. And I know they are quite as commercialized as pharmacy. The difference lies in the fact that the commercialism in these other fields can more easily be covered with a cloak of humanitarianism. In pharmacy we have merchandise to sell and

merchandise cannot be covered up. It is just as humanitarian to produce, standardize, and provide diphtheria anti-toxin, or the tincture of digitalis as it is to inject it and charge for the injection. It is just as humanitarian to produce and provide antiseptics and anesthetics as it is to apply and administer them and charge, not only for their application and administration, but for the operation that their application and administration makes possible. I am not condemning the making of money by the professions or in business. The ability to make money is the factor which gives stability and makes it possible to give service. I am only asking that we be fair to those who make money in pharmacy as we are to those who make money in other professional activities.

But now as to medical education at the turn of the century. My medical class was the class of 1903. The membership of that class was made up in part by Dr. F. E. Townsend of old age pension fame, nine men who held the bachelor's degree and two men whose only qualifications for study of medicine were the completion of the grades and several years experience in a butchershop. One of my most capable and inspiring clinical teachers was a graduate of the College of Medicine of the University of Iowa, when the course consisted of two series of lectures of eight months each. It is true that in my day the medical course had been increased to four years. But the freshmen sat in on the lectures with the sophomores and the juniors did likewise with the seniors. If a freshman did not pick up an idea the first year, he might catch it in the second and if a junior did not realize what it was all about in the junior year, the senior year still stood between him and his patient. According to this method in the four years the student was in the medical school he paid for four years of lectures but only got two sets; a type of commercialism we have never indulged in in pharmacy, nor have we stood for such a senseless system of pedagogy. When it came to medical licensure for practice in those days there were still many states in which one could practice medicine without having had college training, provided he could show that he had been engaged in the successful care of the sick for a number of years. And of course, that could always be shown.

In the last two or three decades of the nineteenth century,

a change had been taking place in medical education. The preceptor system was passing. A better system of medical education was being born. There came into existence the analgen of the modern medical school. Medical schools were established in every city of any size and in some there were many. As the laboratory and clinical sciences were developed medical education became terrifically expensive. When no longer, money could be made out of medical education, the privately owned medical schools were forced to discontinue or find affiliations with state supported, or highly endowed institutions. Medical men were quick to see that the future of their profession depended upon its educational program. Organized medicine took advantage of that vision and that and nothing else has been responsible for the entrenchment of medicine in its present position of leadership among the professions and in the minds of the public.

But let us return to pharmacy as I met it. I could easily count on the fingers of my hands the deans of the colleges (and I confine the statement to deans because of them we expect vision and leadership) who had caught the vision that the future of pharmacy is what we make it. Most of them had not caught the idea that opportunities in a profession do not just happen. They have to be created by certain lines of effort. The proof that they had not caught the vision was evidenced every time an effort was made to advance educational standards. The objection came from the deans that we cannot advance our educational standards ahead of our legal standards. In other words, they said the boards must fix the standard, ignoring entirely the fact that laws are made by the public, not by the boards and that they come into existence as the result of education. You can readily understand why it was that years ago when a trade journal asked me what I thought was the matter with pharmacy I replied it was lack of vision among the deans of our colleges and when they asked me what I considered was pharmacy's greatest need, I replied that it was the funerals of these same deans.

There is not time, and neither is it necessary to go into the details of the development of the pharmaceutical program as we have it today. I should like only to call attention to one incident that occurred which was of such tremendous importance that no discussion of our educational

program would be complete without it. I speak of the Commonwealth Study of the function of the pharmacist as conducted by Dr. W. W. Charters, then of the University of Pittsburgh, now of Ohio State.

Other professions in the development of their educational programs have had the support of the great foundations. Pharmacy pleaded long for that support, but was refused. Dr. Charters in 1922 came to our aid. That study did much for our educational program. It justified the existence of the pharmacist. It pointed out just what his function is. It revealed the characteristics and traits which successful pharmacists possess. It showed his importance in the community as a most important factor in the public health program. It pointed out new fields of endeavor. It showed that pharmacy is quite as important in its relation to agriculture as it is to medicine and public health. It showed the relation of the pharmacist to the community life as a citizen, as a leader in government, education, and moral welfare and it justified the educational program already begun and pointed out the necessity of giving the student a better background training and a broader and more intensive technical training in order that he may have the ability to adapt himself and train himself to meet the new conditions as they arise in his profession in an ever changing world.

And finally let me briefly summarize the changes that have taken place in attitude and accomplishment through a period of thirty years as a result of our educational program.

Where in 1908 there were but a few states requiring any kind of college training for licensure, there are forty-three that require graduation. Where in 1908 the minimal requirement for the study of pharmacy was one year of high school and the college course was two years in length, now the minimal requirement for study is four years of high school and the minimal college course is four years in length. Where in 1908 there were few graduates in pharmacy and little graduate work was being done, now many great universities are giving graduate courses in the pharmaceutical sciences and many young men are doing research and are available for research and teaching in the professional field. When in 1908 not a single undergraduate student was admitted to the honorary scientific society of Sigma Xi, this year some

two score will have earned this honor. When in 1908 scientific articles suitable for publication in scientific journals were limited in number, now there is so much high class material, publication is long delayed. Where in 1908 the word pharmacy could not be found in a single issue of *Science*, the official publication of the American Association for the Advancement of Science, now both the American Pharmaceutical Association and the American Association of Colleges of Pharmacy have become affiliated with that organization, pharmacists hold membership in its governing council, a pharmacy section is an integral part of its organization, holding semi-annual programs, and articles dealing with pharmacy are appearing in *Science* and the *Scientific Monthly*. When in 1908 pharmacy had no affiliation with national educational bodies, now it holds membership in the American Council on Education and is contributing to the work of that organization. Where in 1908 there was no pharmaceutical standardizing body, now there has been established by the National Association of Boards of Pharmacy—the American Pharmaceutical Association, the American Association of Colleges of Pharmacy, and the American Council on Education, a standardizing body known as the American Council on Pharmaceutical Education. In 1908 pharmacy was not called into consultation by any other professional group. In 1937 the American Council on Education established a forum on professional education, including the professions of medicine, dentistry, pharmacy, law and engineering, to discuss the problems that may be common to all the professions. Just now this forum has before it the problem of how the ethics of the professions may be improved and universities influenced in the support of professional education, and lastly, today, we have our own Journal, *The American Journal of Pharmaceutical Education*, dealing exclusively with problems of pharmaceutical education. More can be said were it necessary, but it is enough. If these facts themselves do not bring a sense of pride and satisfaction, I shall not attempt to paint a picture that will.

During the year 1937 I looked through the pharmaceutical literature of the world in order to find a sentence uttered by a druggist that embodied the greatest amount of wisdom. In my opinion that honor went to Walter F. Meads, Secretary of the Board of Pharmacy Examiners of Iowa, when he

said "The Pharmacist should get this point firmly fixed in mind, that it will never be possible to promote successfully, any legislation in the interests of the profession of pharmacy, that is not backed by the sound policy of public health and welfare." Nothing has brought more satisfaction to me than to find that statement was also concurred in by the members of the boards of pharmacy of the states of Minnesota, the Dakotas, Nebraska, and Iowa, assembled at Des Moines last week. It means that pharmacists have come to the realization of the fact that they constitute an outstanding bloc in the public health program.

In closing I feel that I would be negligent of my trust, if I did not bring to your attention one great wrong that is being perpetrated against pharmaceutical education and pharmaceutical practice by pharmacists themselves. I refer to the enormous sums of money that have been made in pharmacy that are going into medical schools, medical education, and other institutions and activities, not pharmaceutical. To illustrate what I mean I shall give but three instances; they can be cited by the thousands.

Sir Henry Wellcome was born in Wisconsin. I understand he made millions. He established schools of tropical medicine and spent millions in archeological investigations. I cannot find where he gave one cent to pharmaceutical education which certainly contributed to the creation of his wealth.

Recently Mr. Charles R. Walgreen gave \$550,000 to the University of Chicago for the establishment of a chair for the study of American institutions. I cannot find where he has given one cent to pharmaceutical education, which certainly contributed to the creation of his wealth.

Now, coming home; a drug firm in Lincoln, Nebraska recently equipped the quarters of the local medical society at a cost of several thousand dollars. This drug firm has not given one cent to the support of pharmaceutical education, although it has made thousands of dollars out of the College of Pharmacy of the University of Nebraska for supplies bought for educational purposes in the last twenty years. Certainly pharmaceutical education has been a factor in contributing to this firm's wealth.

In a recent editorial in the American Journal of Pharmaceutical Education I have said "The crying needs of

pharmaceutical education today is idealism and money. Idealism we have in good measure, money we have in small measure. Our present sources are from student fees, from taxation, and a few piteously small endowments. Unless we can get it in larger amounts progress must be slow. We need money to strengthen and develop our undergraduate colleges. We need it to develop graduate work in the pharmaceutical sciences. We need it for buildings, for laboratories, for equipment, for men. We need it for the establishment and endowment of chairs and scholarships and fellowships and for the support of research. We need it for experimental work in the laboratory and in the field for the development of a drug plant industry. We need it for the scientific studies of the problems of pharmaceutical education. It would seem that the natural place to appeal for funds for pharmaceutical education and research would be the pharmacist himself and those who have made money in the drug industry. For these needs pharmaceutical education has a right to demand a fair share of that wealth which our educational program has been instrumental in creating.

Twenty centuries ago the Master of Men walked the shores of Galilee and placed the responsibility for the growth of his kingdom, not upon Ceasar in Rome, but upon the humblest of men casting their nets into the sea. He turned them away from the sea to become fishers of men. And what those men did has been ringing down the centuries and will continue to ring until time shall be no more. I speak with great earnestness and with great reverence when I say that I believe the same obligation and responsibility has been placed upon each of us, whatever our specialized work may be. You and I have a task, the completion of which can be shifted to no other person. Your integrity as a student determines the status of pharmacy in this University. When you enter the practice of your profession in a community in this State, what you are and what you can do will determine the status of pharmacy in that community. Pharmacy is what you make it. Its opportunities and its destiny are in your hands. Professional relationships will depend upon your contacts with professional men in your community and not upon what goes on in legislative halls. Pharmaceutical education in this University will depend upon the support you give it. And your business will prosper

to the degree you support pharmaceutical education. No line of human activity has ever risen above its educational program. And no activity has continued to progress without such a program. An institution like a business is not built by the men that leave it. It is built by the men that stay by it. Pharmaceutical education in this University has been fortunate in an unbroken leadership of nearly half a century. That leadership was courageous. That leadership had a vision. It is your most priceless heritage. Maintain that vision, for without vision a profession, like a people, will perish.

Some Thoughts on Educational Objectives

WILLIAM A. JARRETT
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It is generally believed that education is intended to prepare men and women to live a more complete life and if we accept this, then we must agree that what we are working with in education is primarily, man, and only secondarily subject matter and methods. The object of education, then, is the betterment, first of all, of the individual and through him the betterment of society and of conditions under which society lives.

In the past, as a policy, we have neglected the student and overemphasized methods. If you look back over your college life, the teachers you remember longest are those who gave something of themselves and not those who merely dispensed facts.

There is a difference also between instruction and education. Instruction appeals to the senses, education to the will and to the heart as well as to the intellect.

If we have methods and a system of education built on a wrong philosophy, we will have chaos. If, first of all, we have a correct philosophy of life—then our methods and results will be correct.

A correct philosophy of education should be a workable principle, not mere words. Our principles are correct if they are based on human nature, on the end of human nature and on the proper means to this end.

Is our educational philosophy of today correct? Is it based on human nature—are we considering all of the fac-

ulties, those of the mind, the heart and the will as well as the physical? Does our philosophy of education consider the end of human nature? Is its objective material—a search for fame, honor, wealth and social prestige, or is its objective spiritual? Does our philosophy of education include the means to this end? Do our schools and our teachers understand human nature and the knowledge of its end?

There cannot be two correct philosophies of education. There must be uniformity.

I have recently considered the bulletins of fifty-seven colleges of pharmacy in search for a statement of aims or objectives. Twenty-six state no purpose and of the remaining thirty-one the aims, as stated, vary so widely that it would be impractical in this paper to quote them.

This leads me to ask the question, just what are our aims? It would seem to me to be quite reasonable to expect that in order to construct a curriculum we must first of all have a common objective. I might compare curriculum building to that of road building. Certainly we do not start building a highway unless we have a known destination, say for instance, Chicago. We must constantly keep this destination in mind for if we do not, we may soon find ourselves in Pittsburgh, Baltimore or some other place. The subjects in our curricula may be compared to the paving material of our highways. Our choice will depend upon the nature of the country and upon our capital. The contractors and laborers may be compared to our educational executives and faculties. The character of the completed job depends upon the personnel and the materials. Whether we use cement, macadam, cobblestones or gravel is up to us, but regardless of what our choice may be we will never arrive in Chicago unless we keep the location of Chicago constantly before us. So, too, in building a curriculum—we must all have a common objective.

As I have previously stated, there should be two fundamental thoughts in our philosophy of education:

1. the development of the individual for his own sake, and
2. the development of his environment.

I realize that this is in direct opposition to many modern educators who view education only from a materialistic or social viewpoint. They fail to see that if we take each of us

individually from society, we have no society. The solidarity of a state owes its solidarity to my voluntary submission. This is the direct opposite of a dictatorship—where I am involuntarily forced into submission. Correct education, then, becomes a socializing means of preserving our democracy. From our present system of education we expect obedience to law and order but do not preach it, while we preach democracy but do not practice it.

The youth movements as recently manifested through strikes and other uprisings in our schools and colleges prove that there is today dangerous leaning toward liberalism, and unbalanced emotionalism. A true educator cannot tolerate this co-called liberalism because he knows that the first evidence of intelligence is discrimination. Undisciplined minds become the victims of everyone. It is only when the intellect controls instead of the emotions that we are on the road to personal excellence. If our colleges do not succeed in forming correct habits of thinking, we are not successful educators.

Throughout the world a new order is steadily replacing the old one and if this is not properly controlled by intelligent men and women, we in America can only expect chaos such as we see it today in many parts of the Old World.

As educators, we have more grave responsibilities than ever before to correct through true education those forces which are bent upon the destruction of civil liberties and Christian culture. I ask you, which is more important, turning out students who are only skilled pharmacists, or graduating students having high ideals; defenders of our democracy who will become leaders of correct thought in their communities and will contribute their services to the cultural improvement, not only to the profession of pharmacy, but to civic life as well? We are obligated to teach sound moral and social principles as well as sound pharmaceutical principles and we can do this only if our principles are sound. Let us, then, give at least as much thought to unifying our philosophy of pharmaceutical education as we do to our curriculum building.

In College and Out¹

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In a previous paper² it was reported that 45 per cent of those students who enrolled in the Purdue University School of Pharmacy for the years 1926 to 1931 inclusive were graduated. The remaining 55 per cent left the University for various reasons.

These figures indicate losses which seem to be much too high. The most plausible explanation for this condition, which we could offer, is that the students were not carefully selected for the job which they were supposed to do, that of going to college and profiting from it. It was also suggested that the selection might be greatly improved by spending more time in the selection of our students for college rather than in trying to salvage so many of doubtful ability who are permitted to enroll.

This paper is a study of those who have graduated from the Purdue University School of Pharmacy during the years 1931 to 1936 inclusive, the total number being 129. Of this number there were 27 for whom no orientation records were available, leaving 102 subjects included in this report.

The orientation tests are given to the students at the time they enter the University and include the Psychological Test, Mathematics Training Test, and the Purdue English Test. The "grade point average" and the "percentile class rank" are data obtained from the office of the Registrar of the University. The student's percentile class rank represents his percentile ranking with the whole of the graduating class and not those of pharmacy alone. Each graduate was assigned a number and placed in the decile group to which he belonged by virtue of his orientation test record.

Table 1 comprises the 102 students arranged in summary decile groups, setting forth averages as to orientation, grade point, and percentile records. This data is further summarized in Table 2.

¹Presented at a meeting of the Boards and Colleges of District No. 4, Madison, Wisconsin, March 24, 1937.

²Our Educational Losses. *J. Am. Pharm. Assoc.* 25:451 (1936).

TABLE 1

Decile Group	Number of Students	Orientation Average	Grade Point Average	Percentile Class Rank
1-10	3	6.53	3.51	18.33
11-20	13	15.45	3.70	36.00
21-30	8	24.86	3.92	55.60
31-40	17	34.67	3.95	49.00
41-50	19	46.58	3.90	46.20
51-60	15	55.19	3.91	44.00
61-70	10	66.20	4.33	71.70
71-80	13	75.99	4.59	75.30
81-90	3	87.00	4.40	85.33
91-100	1	91.75	5.35	98.00

TABLE 2

Decile Group	Number of Students	Orientation Average	Grade Point Average	Percentile Class Rank
1-30	24	15.61	3.71	36.64
31-60	51	45.48	3.92	46.40
61-90	26	76.39	4.44	77.44

These data are interesting and significant, and indicate that one should be able to predict, within reasonable limits, the student's scholastic record in the University from his orientation grade. This assumption is reasonably safe because there is a distinct correlation between the results of the orientation records and those set up by the student during his years in college.

Salaries and Scholastic Records

In the autumn of 1936 the Extension Department of the Purdue University School of Pharmacy obtained, by means of a questionnaire, considerable information concerning our graduates for the years 1931 to 1936 inclusive, salaries being one of the items. It was thought that a correlation might be made between the salaries, which were reported, and the orientation records, grade point averages, and the percentile class rankings. The number of students involved is reduced to 68, being those who replied to the questionnaire. Even so, the data is, we believe, quite significant.

The results are shown in Table 3 and averaged in Table 4. It will be seen that the salary differences do not follow the other data very closely but it is clear that the low ranking students seem to draw the lower salary scales, which is what one might expect.

TABLE 3

Decile	Number of Students	Orientation Average	Grade Point Average	Salary Average
1-10	3	5.91	3.48	\$135.00
11-20	9	15.03	3.63	119.00
21-30	6	22.48	3.71	122.50
31-40	10	35.21	3.80	136.40
41-50	10	46.57	3.78	120.60
51-60	10	55.34	3.65	139.50
61-70	6	65.33	4.60	149.00
71-80	10	74.93	4.46	117.50
81-90	3	87.00	4.40	124.83
91-100	1	91.75	5.35	

TABLE 4

Decile	Number of Students	Orientation Average	Grade Point Average	Salary Average
1-30	18	14.47	3.61	\$125.50
31-60	30	45.70	3.74	132.16
61-90	19	75.75	4.48	130.44

Salaries of the Recent Graduates

It was felt that the salaries of the more recent graduates would likely be less than those of the earlier years. For this reason those for the years 1931 to 1934 inclusive are considered separately in Tables 5 and 6. This further reduces the number of students involved but the figures are convincing. Table 6 clearly indicates that the students with the better scholastic records command the better salaries, which is certainly significant.

TABLE 5

Decile	Number of Students	Orientation Average	Grade Point Average	Present Monthly Salary
11-20	5	14.38	3.744	\$130.00
21-30	3	23.53	3.648	112.33
31-40	7	34.55	3.747	173.16
41-50	6	47.07	3.70	122.83
51-60	7	55.85	3.834	156.71
61-70	3	66.50	4.675	172.00
71-80	5	75.80	4.880	128.00
71-90	2	87.50	4.480	141.80

TABLE 6

Decile	Number of Students	Orientation Average	Grade Point Average	Present Monthly Salary
11-30	8	18.75	3.69	\$121.16
31-60	20	45.15	3.76	150.90
61-90	10	76.60	4.67	147.00

Groups of Occupations

Those who replied to the questionnaire were asked to state the nature of their employment. Nine such divisions of work were indicated. These are shown in Table 7 along with the number replying for each year and the average monthly salaries.

This data is further summarized in Table 8, in the descending order of the salaries reported. Managers of chain stores receive the highest pay, salesmen the next highest, and store owners are third in salary scale. The students, most of whom are scholarship appointees, are the lowest paid and perhaps should not be counted as one of these groups.

TABLE 7

	1931 No.	1931 Av. Mo. Salary	1932 No.	1932 Av. Mo. Salary	1933 No.	1933 Av. Mo. Salary	1934 No.	1934 Av. Mo. Salary	1935 No.	1935 Av. Mo. Salary	1936 No.	1936 Av. Mo. Salary
Own Stores	1	\$175.			1		1	\$110.				
Managers	2	240.	1	\$104.	1	\$187.33	2	\$156.	2	\$162.		
Ass't. Mgrs.	1	120.	2	115.50			3	132.66	4	132.50		
Salesmen	2	200.	2	200.					1	156.	3	\$143.33
Laboratorians	1	105.	1	110.			3	143.33	1	110.	2	96.25
Clerks	3	110.	3	103.33	3	122.	6	110.86	2	100.	6	90.
Technicians									3	102.		
Students	1	70.	1	15.	1	70.			3	45.	2	55.
Teaching									1	125.	1	100.
Total	11		10		5		15		17		14	

TABLE 8

Number Employed	Business	Average Salary	Pay Rank
8	Managers	\$181.86	1
8	Salesmen	175.44	2
2	Owners	142.50	3
8	Laboratory	130.91	4
10	Asst. Managers	125.16	5
2	Teaching	112.50	6
23	Clerks	106.03	7
3	Technicians	102.00	8
8	Students	51.00	9

Summary and Conclusions

1. It has been shown that the orientation test average of a student is a reasonably reliable basis for predicting his scholastic record in college.

2. The abilities and accomplishments of students, applying for entrance to the University, can be measured within a reasonable degree of certainty. This being true, it is suggested that those students who apply for the special callings, such as pharmacy, be more carefully selected.

3. The abilities and attainments of students in college seem to check with the salaries they earn, the lowest ranking students reporting the lowest salaries.

The "Professional Pharmacy" at West Virginia University

J. LESTER HAYMAN

West Virginia University

The training of the prescription pharmacist today must keep pace with our modern times. It is no longer sufficient to limit the pharmacy students' knowledge to formulas of the United States Pharmacopoeia, the National Formulary and the dispensaries, all important as this may be. Of the millions of prescriptions filled in the United States yearly, thousands upon thousands contain the specialties of the reliable manufacturers of pharmaceutical products. While it may not be possible to discuss each of these preparations in the classroom, facilities should be provided, whereby the pharmacy student can familiarize himself with these products.

The College of Pharmacy, West Virginia University, has recently completed the main unit of a "professional pharmacy", choosing to use this term in preference to "the model pharmacy."

The "Professional Pharmacy" is a unit in the University Health Service and is equipped with a semi-open prescription department where physicians' prescriptions are compounded. The pharmacy is operated upon a strictly professional basis.

Immediately in front of the prescription department on both sides of the room are uniquely arranged shelves, encased with sliding glass doors, fashioned in the form of booths with solid canopy tops. Each booth is indirectly lighted. Upon the shelves are displayed the pharmaceutical preparations intended for prescription use. Between each booth, and at the extreme ends, a pilaster is constructed, containing three small display cases with indirect lighting. These cases will be used solely for the purpose of displaying upon a rich, velvety background, the newer products with appropriate literature as they appear upon the market. By such arrangement the student can quickly learn which are the newer medicinals.

It is the hope of those in charge of the "Professional Pharmacy" that the manufacturers of medicinal products will cooperate by supplying samples of their products for demonstration.

It being the desire to conduct the "Professional Pharmacy" on a strictly professional basis, no product, with the exception of first aid material, which is advertised directly to the public or which is recommended for home medication will be displayed upon the shelves.

EDITORIALS

State Support for Pharmaceutical Education— A Resolution*

The plight of our colleges of pharmacy has been alluded to earlier in this report. On the one hand they are endeavoring, as the gateways to the profession, to make some effort in selecting proper individuals for the practice of the profession. On the other hand, they are confronted with decreased income from tuition fees. It seems timely, therefore, to call attention to the fact that if high standards of pharmaceutical education are to be maintained, and if the doors are not to be opened to all comers, the income from tuition fees must be supplemented by endowments or direct financial support either from the profession or from the state. Endowment funds are not very plentiful among the schools of pharmacy. Where they exist they have been supplied largely by manufacturing interests. When this is the case, there is always the implied thought that the teaching or at least the general attitude of the faculty and trustees will be influenced to some degree, by the philosophy of those who are responsible for the endowment. There may be no justification whatever for such a view, but we cannot escape the implication.

State aid has been forthcoming for pharmaceutical education in state supported universities and professional schools in the western and southern parts of the United States, but there has been very little of it in the east. This is undoubtedly due to the fact that the so-called independent schools of pharmacy in the east were the first institutions devoted to pharmaceutical education and where they have not maintained themselves as independent institutions, they have become affiliated with universities having private rather

*Dr. Robert P. Fischelis, as Secretary of the New Jersey State Board of Pharmacy, has caused the Committee on Pharmaceutical Education and Standards to present this resolution to the New Jersey Pharmaceutical Association. The Association adopted it without a dissenting vote.

than public sources of income. Unfortunately, these affiliations have brought little financial support to the colleges of pharmacy involved, although they have brought prestige and the benefit of drawing upon faculties in non-professional subjects. It seems timely, therefore, to suggest that the public, which receives a large share of the benefit of better pharmaceutical education, should share the expense of such education just as it shares the expense of education for chemists, engineers, physicians, dentists and other professional groups.

This is not a plea for some specific appropriation from the legislature for the colleges of pharmacy. It is, however, a strong plea for the inclusion in state appropriations for aid to professional education, of an allotment for the education of the future pharmacists, whose collegiate training determines to a very large degree the future type of service which will be rendered by the pharmacists of the nation. We believe it is timely for the New Jersey Pharmaceutical Association to record itself on this question.

Robert P. Fischelis.

Cultivating Pride and Good Will Builds An Institution

The present School of Pharmacy at the University of North Carolina was established in 1897 as a result of the continued insistence of the State Pharmaceutical Association. Twice before this date, schools of pharmacy had been created at the University, the first time in 1880, the second in 1889, but neither venture was successful for more than a few years.

The present school has been supported warmly throughout its forty-four years of development by the pharmacists of North Carolina. Partly for this reason and partly because the University itself is a state supported institution, a decision was reached in 1932 to dedicate the use of corridor walls of Howell Hall to enlarged, framed photographs (22" x 27") of North Carolina pharmacists who had made or who were making noteworthy efforts to promote pharmaceutical ideals and standards.

At the present time about thirty such photographs are hanging in the hallways, each bearing a printed card of identification. While the School Library contains uniformly framed pictures of noted historical figures, the corridor space belongs exclusively to our own people—the people who made possible the creation of the School; the people who have defended its aims; the people who personify the constituency of the School. Who then should say that such homage is not an act of appropriate graciousness?

The machinery of this plan has been simple and except in a few instances has been without expense to the School. A subject is selected who is deemed worthy of perpetuation. A relative or close friend is then asked in confidence to furnish a photograph and to contribute the small sum (\$6.00) necessary for enlarging and framing the photograph for placement in the only building in the State that belongs exclusively to pharmacy. These approaches are always of a dignified character and nearly always have been successful. No discrimination has ever been made between alumni of the School and non-alumni. Actually, because of its relative youth, the School harbors the photographs of more pharmacists who were trained elsewhere than it does of its own sons.

Results that were entirely unanticipated when the plan was initiated, have developed in several ways. One instance can be cited. Quite an elderly man who became a pharmacist by the old preceptorial system but who nevertheless has been an outstanding constructive figure in the drug life of the State for many years was decidedly opposed to any prerequisite law that involved a four-year course of study. His photograph was secured without his knowledge or consent. One commencement day he came into the building accompanied by his nephew who was a senior in the School of Law. Wandering about he chanced to see his photograph with a citation of his activities on an accompanying card. Studying the picture for several minutes with increasing mist in his eyes, he finally turned to his nephew and said: "Billy, this School is my alma mater now!" Thus his attitude was changed from one of indifference to the School's aims and hopes to one of a helpful supporter of his "Alma Mater." The building is now a second home to him. We try in many ways to make all of the pharmacists of North

Carolina feel that the School is their school, for it is, being tax supported. The photographic plan has helped greatly in furthering our objectives.

This hurriedly written article may stir the interest of teachers who are affiliated with state universities.

J. Grover Beard.

Who Will Write It?

Recently, the publishers of a well known textbook in pharmacy asked us to accept, with their compliments, a copy of this book with the hope, of course, that it might be adopted for use in our school. Our reply was that inasmuch as we knew the book well, and it would not fit at all into our plans, we hardly felt justified in accepting it. This incident led us to thinking rather seriously about our present textbooks in pharmacy.

Texts in chemistry, physics, biology, etc., have kept up well with the changes that these sciences have undergone in the recent decades. Further, as the pharmacy curriculum has grown from a two year course to a four, in which are included standard college courses in the preliminary sciences, four years of chemistry in most of the good schools, one to two years in biology, at least one in physics, a semester or more in bacteriology, etc., need for the old time compendium style text in pharmacy seems to have entirely disappeared. Indeed, we feel that thoughtful students must find it rather paradoxical to have texts of this nature put into their hands under the conditions of training which they are privileged to have at the present time. The field lies fallow for a modern text in pharmacy which takes all of these changes into consideration. Who will write it?

Wortley F. Rudd.

The New Food and Drug Law and the Responsibility of the Pharmacist

The following letter has just been received from a prominent Washington official:

"I hasten to send you a copy of the House conference committee report which contains the text of the bill as finally enacted and which is now before the President for signature. We think the measure is a distinct improvement over the old law and expect to be able to afford infinitely better protection to the public than was possible under the old law.

"Let me assure you that we appreciate very much the splendid part played by you and your associates in bringing this legislation to a successful culmination."

It is a source of distinct gratification that the American Association of Colleges of Pharmacy assumed leadership among national pharmaceutical organizations in developing sentiment favorable to new and better legislation in this field.

Now that the bill has been passed, it is even more incumbent upon teachers in the pharmacy schools throughout the country to thoroughly acquaint their students with the new bill. And further, to inculcate in them as far as is possible, a feeling of responsibility for complete cooperation with those in authority in seeing that the public gets the protection which the new act promises.

Wortley F. Rudd.

Shadows or Substance?

To those whose experience in pharmaceutical education has extended over a quarter of a century or more, the shift in individual and institutional leadership in this field is an interesting study.

In instance it presents complete reversal in conditions as they were in the first decade of the present century. With few exceptions, no colleges of pharmacy which were co-ordinate units of larger educational institutions were considered very serious contenders for leadership in those early days. Indeed, deans and faculties in the institutional schools of pharmacy were not supposed to develop the techniques by which leadership (or shall we call it control) had been acquired and held. And in the main, such assumptions were correct.

The first task of the unsophisticated was to subject such

techniques to critical analysis. Although employed successfully for three quarters of a century, were they based upon principles that would make them equally so in years ahead? Were they shadow, or were they substance? An early experience at national meetings has stayed with us. Was it possible for any school of pharmacy to be as good, and their faculties as capable as their representatives, both publicly and privately, declared them to be, whenever opportunity offered? Does not real worth finally make its own way? Can the influences of strong institutions and gifted faculties be confined?

It soon became apparent to us, however, that so adroitly had these techniques been developed and practiced, that much of American pharmacy had become imbued with the idea of superiority of those who often enough, and cleverly enough spoke of themselves, and of one another, as the best in the field.

An example: A young man from the middle west recently remarked to us that ten years ago he regarded an institution (one not particularly well known for its modesty) as among the leaders, if not the leader in pharmaceutical education in this country, and that he seriously considered going there for his graduate work. Given an opportunity to study the situation at somewhat closer range, he was now convinced that it did not offer even the undergraduate strength that he would want.

And so it has come about slowly, but surely, that claims of superiority in either pharmaceutical education, or pharmaceutical practice are not being accepted blindly any more. What is back of these claims? Why, in fact, is it necessary to boast at all? These and similar questions must be answered satisfactorily before the younger generation of four year graduates in pharmacy, many of whom have spent all of this time in fine university atmosphere, are willing to accept one's estimate of himself or of his institution, or even of his co-workers, if such institutions and individuals are notably given to performing the duties that devolve upon members of mutual admiration societies.

Wortley F. Rudd.

An Observed Trend in Curricular Changes in Colleges of Pharmacy

A review of the curricular changes made particularly during the past ten years by colleges of pharmacy shows that they include not only new courses intended to train students in newly developed fields of pharmaceutical activity but also academic and professional courses from which students may make such a selection as will best prepare them for the particular phase of the pharmaceutical service in which they intend to engage after graduation. In other words, there has been a rather well-marked tendency toward greater flexibility in curricula and this changing order conforms to the modern trend in education, namely, to adapt courses of study to anticipated student needs rather than have students conform to the courses of fixed and rigid curricula. Each student, upon entering a college of pharmacy, presents an individual educational problem and in order to create maximum efficiency for a specific endeavor, curricular flexibility is not only desirable but necessary. For example, if an entering student has a high college ability rating, has shown especial aptitude in the sciences, and, in conference, exhibits a predilection for investigation (usually indicated by an inquisitive nature), he should be encouraged to lay a good foundation for graduate work in some field of the pharmaceutical sciences. In the first two years of his training he should be encouraged to elect courses in mathematics, physics, chemical German, etc., all of which are essential before he can embark upon postgraduate study. On the other hand, an entering student who also has a very good college ability rating but who definitely expects to engage in retail pharmacy, should be encouraged to elect those courses that will equip him to best serve the public in this capacity. As examples of these courses I suggest psychology, political science, speech, (not oratory), advanced economics, sociology, etc. Furthermore, upon reaching the fourth year of their respective courses of study, the first student should be encouraged to elect such professional courses as biological assay of drugs, physical chemistry, qualitative and quantitative organic chemistry, whereas for the second student courses in cosmetics, industrial manu-

facturing pharmacy or pharmaceutical technology would fit into his educational picture. These few examples may indicate how a curriculum having both academic and professional flexibility may be adapted to student needs.

There are, however, basic and fundamental courses in pharmacy, pharmaceutical chemistry, and pharmacognosy which must be a required part of all curricula. These courses and their content are well known to pharmaceutical educators and need no comment. It may be pointed out, however, that these required courses in the three departments are offered in well-ordered sequence, each course being a prerequisite to the one immediately following it in its sequence. In the great majority of curricula these courses are spread over a period of three years. Special attention is called to these courses that occur in sequence over a period of three years because there seems to be some difference of opinion as to what disposition should be made of those students who desire to enter colleges of pharmacy with advanced standing in courses that are required in the curriculum but which are not required **pharmaceutical** subjects and who feel they should be allowed to complete the pharmaceutical course in less than three years and be granted a Bachelor of Science in Pharmacy degree. There is no question but that credit for advanced standing should be given to these students. However, I cannot see how by so doing, the length of time required to finish the professional sequences would or should be affected. Surely no teacher of pharmacy can condone the so-called "doubling up" process. Surely we don't believe that galenical pharmacy and dispensing pharmacy, general chemistry and inorganic pharmaceutical chemistry or organic chemistry and organic medicinal products, can be taught consistently at the same time. I, for one, do not. It has been the experience of many colleges of pharmacy to have persons who hold B. A. and B. S. degrees in other specialties and even M. D.'s and Ph. D.'s make application for admission and express the belief that they should be able to complete their pharmaceutical work in one or two years. It is my opinion that regardless of the degrees a man holds, he should be required to complete the three-year sequences and by so doing, meet the requirements for the B.S. in Pharmacy degree.

Charles H. Rogers.

The Marihuana Menace

Marihuana is the Mexican name for the plant known as Indian hemp. Its botanical name is *Cannabis sativa*, Linne.

Indian hemp was originally grown in the New England, the Virginia and the Pennsylvania Colonies for fiber. From these colonies, its cultivation spread to the early settlements in Kentucky and Missouri. It has also been grown for commercial purposes at various times in Illinois, Indiana, Southeastern Pennsylvania, Nebraska, Iowa and California. In 1931, there were under cultivation for commercial purposes approximately 750 acres in Wisconsin, Illinois and Kentucky. At the present time, it grows wild in nearly every state of the Union, but most abundantly in Western Missouri, Iowa, Southern Minnesota, the Southwestern and Western states.

Today, the plant is grown primarily for its fiber, which is used in making fabrics, rope, etc.; for the fruit (hemp seed) which is used as a bird food and for the production of oil and oil cake; for the flower tops of the pistillate (female) plant which is used as a drug. When it is grown for fiber, it is harvested just before the male flowers begin to shed pollen. At this time, it is not sufficiently mature to be used as a drug because the maximum amount of active principle has not yet developed. When grown for the production of the drug, it is allowed to remain in the field several weeks longer but the male plants are removed because pollination destroys some of the active principle. When the plant is cultivated for the production of seed, it is allowed to remain in the field until the fruit is fully ripe.

The active principle of the plant resides in the resin which occurs in greatest amounts in the flower tops. This fact is evidently not known to the makers of marihuana cigarettes because all of those which I have examined consisted almost wholly of the crushed leaves and stems. From this, it follows that the material which is commonly smoked cannot be very potent.

Hashish is a confection made by mixing the flower tops with sugar and aromatic spices. It is eaten by habitues in the Orient but, as far as I know, it is not used in this country. In the Oriental countries where the drug is smoked, the flower tops are used and they are usually smoked in a pipe.

Much of a sensational nature has been written in the popular literature about the effects of this drug. As a matter of fact, however, our knowledge of its physiological action is rather indefinite because the effects are largely psychic and, therefore, they cannot be determined on experimental animals. Medical men and scientists have disagreed on its physiological properties and some are inclined to minimize its harmfulness but there is evidence to indicate that, when used excessively, its effect is deleterious. The principal effect of the drug is upon the brain which loses the power of directing and controlling thought. Its continuous use in large amounts no doubt produces mental deterioration in many cases. Its more immediate effect apparently is to remove the normal inhibitions of the individual and to release any anti-social tendencies which may be present. Those who indulge in its use habitually, eventually develop a delirious rage after its administration. During this time they are, temporarily at least, irresponsible and prone to commit violent crimes. The following excerpt from a report of one of the experts of the Sub-committee on Cannabis of the Opium Advisory Committee of the League of Nations gives some indication of the quantities which are consumed by individuals who become dangerous: "If hemp is consumed at very frequent intervals—some inveterate addicts smoke over fifty pipes of it in 24 hours—the subject lives in a state of permanent stupor interrupted by increasingly frequent periods of exaltation and well-being. These alternate with crises of melancholia accompanied by terrifying hallucinations which provide confirmation of his or her more or less delirious convictions. At this stage, addicts become dangerous; they are intensely susceptible to suggestion; the simplest affirmation or the slightest obstacle arouses transports of fury, joy or jealousy or a menacing attitude. Eventually they have to be placed under restraint as the result of some crime or acts of violence." The experts also contend that the drug is not habit-forming. That is its use does not induce a bodily craving for the drug when withdrawn. Those who indulge in it do so solely for the pleasure or relief from worry which it is assumed to give them.

Up until a few years ago, the illegitimate use of the drug was observed particularly among the Latin-American or Spanish-speaking portions of our population. The sale of

cannabis cigarettes was confined principally to the states along the Mexican border, the cities of the Southwest and the seaports on the East and West Coasts. Apparently, its use has spread in recent years to other sections of the United States which may be due in part at least to the wide publicity which has been given to its effects by the press. However, it is believed that the extent of its use as stated in newspapers and other publications is greatly exaggerated. In 1936, for instance, there were only 15,715 cigarettes seized by law-enforcement officers in the entire United States. From time to time, unauthenticated reports are given out that marihuana cigarettes are being smoked by school children. So far as I know, in each instance where these reports have been investigated, they have been found to be untrue or only an isolated case or two have been discovered.

The wide publicity given to the harmful effects which may be produced in those who indulge in the use of cannabis to satisfy their curiosity or a craving for a new experience has resulted in the passage of both, federal and state laws, to protect the weak and reckless. These laws forbid the cultivation of cannabis and its use for the satisfaction of curiosity or pleasure and restrict its cultivation and use for legitimate purposes, but neither the federal or state laws cover the plant which grows wild in such profusion that its eradication seems to be an impossibility.

On August 2, 1937, the Congress of the United States passed a law regulating the importation, manufacture, production, compounding, sale, dealing in, dispensing, prescribing, administering and giving away of marihuana. This law became effective on October 1, 1937. In general, it provides for the production, manufacture, distribution and use of cannabis under strict supervision which is attained through the imposition of taxes on all who are given the legal right to produce, manufacture, or distribute the plant or any of its parts. In addition, all of the 48 states and the Territory of Hawaii now have laws of some nature for the control of cannabis. Of these, 37 control or license production; 44 control possession; and all 48 control sale. Twenty-nine (29) states include control and regulation of cannabis in the uniform state narcotic act. Eleven (11) states have special cannabis laws and 8 include cannabis in the general narcotic laws.

Cannabis as a drug seems to have met the same fate as that meted out to the medicinal wines during the days of prohibition. The bad reputation given it because of its use for illegitimate purposes and the legal restrictions imposed on the physician and pharmacist have caused it to fall into almost complete desuetude as a medicine. Perhaps this is desirable from the standpoint of the welfare of the public but I am skeptical about the benefits which may accrue. I doubt if we can build up the race by protecting the weak.

Andrew G. DuMez.

(The following letter was received on the occasion of the election of President Chauncey S. Boucher of the University of West Virginia to the Chancellorship of the University of Nebraska. The Editor prints it because it shows the fine attitude of the Secretary of the Board of Pharmacy of West Virginia toward, not only his own state institution, but to the educational program far beyond his own state. It is a gracious letter and manifests a gracious spirit.—The Editor.)

WEST VIRGINIA BOARD OF PHARMACY

Charleston, W. Va.

July 15, 1938.

Dear Dean Lyman:

I am not so sure that the Virginians did such a fine piece of work when they started Nebraska. The second generation produced such a fine state that we now go to the "picture show" and listen to lectures by your governor on how to run a state "out of debt". And also, with your assistance, bring to national prominence a university of more than usual importance. And worst of all, you then come down here and with choice offerings take away from this "mountain state", our splendid university president. Our group had intended applauding all your speeches at Minneapolis, but now we do not know what to do.

Seriously speaking, however, we have lost a most excellent man and Nebraska has gained much with the coming of Dr. Boucher to your institution. He has been very cooperative with the field of pharmacy and that leads, as you know, into the hearts of many people. Any leader on the campus will find that loyalty to his institution, and to the leader in chief will bring splendid influences to work for common good. We presume it means a greater field for Dr. Boucher but it means a loss to us. No such move had been anticipated at all by any friend of our school. You and your school are to be congratulated.

With best wishes,

Faithfully,
Roy B. Cook, Secretary,
West Virginia Board of Pharmacy.

THE EDITOR'S PAGE

For many years before the Editor became an editor he enjoyed the companionship of a large circle of people whom he likes to call his friends. These friends have represented many religious creeds, many political parties, and upon problems of pharmaceutical education they have held divergent views. The Editor's office is located near the center of the United States and perhaps that is the reason why it has become the clearing house for the adjusting of opinion. Along with this the Editor has enjoyed the confidential viewpoints of men and an intimacy that he has both enjoyed and cherished and held sacred. Since becoming an editor this correspondence has increased, but he has found it punctuated with an increasing number of phrases like "not for publication", "for your information only", "confidential, of course" and "I cannot let you publish my thoughts". I sought through the pages of the Journal for a possible inspirational cause for these precautionary phrases. I found the answer in the "Gleanings from the Editor's Mail". I have become an editor. And I have learned that one must not put before the public those things which are written to the Editor in confidence. He has not felt that to date any glaring breaches of faith have been made, but he recognizes the possibility and shall publish with caution. The Editor sees great value in the Gleanings page because it gives the opinions of men in their own language and personality of expression. He hopes others feel this way and that men will continue to use these pages with increasing frequency and in increasing numbers.

There is now on the Editor's desk a letter with a request not to publish. But it deals with a problem the Editor has long had in mind discussing, and it needs to be presented now. The letter expresses a fear that has come from a number of sources and from some of the most idealistic men engaged in pharmaceutical education. The question has to do with what will the American Council on Pharmaceutical Education do to the American Association of Colleges of Pharmacy? The fear is expressed that the Council may adopt an autocratic attitude and will usurp in a large measure

the functions of the Association. The American Association of Colleges of Pharmacy exists primarily for the purpose of improving the plan and the methods of teaching. It has laid down qualifications for membership, but did not plan and has never had a desire to become a standardizing institution. State boards of pharmacy, lacking any other means of standardization, have adopted the minimal standards of the Association as the standards for recognizing schools and as a basis for reciprocity. Lacking other standards and quite unconsciously as far as the Association was concerned, many states read into their pharmacy laws, the minimal requirements of the Association as the basis of pharmaceutical practice. Institutions and organizations and standardizing agencies have turned to and accepted the requirements for membership in the Association as indicating a standing of certain excellence. In other words, there has been no other yardstick by means of which pharmaceutical education could be measured. It placed upon our Association the responsibility of fixing and maintaining standards for pharmaceutical education. This, in itself, might be justified, but to place the responsibility for legislation for the purpose of reciprocity and legislation for the practice of pharmacy upon the Association is a responsibility that is hardly justifiable and which brings a certain amount of odium to the Association which is not best for pharmaceutical education.

The American Council on Pharmaceutical Education is a creation of the American Association of Colleges of Pharmacy, The National Association of Boards of Pharmacy, the American Pharmaceutical Association, and the American Council on Education. It was created in order that American pharmacy might have a standardizing tool representing the specialized fields of pharmaceutical education, pharmaceutical legislation, pharmaceutical practice, and at least one individual representative of the organization that is concerned with the whole field of education from the secondary level to, and including, the professional level. Of the ten members constituting the American Council on Education, three each are chosen by the national pharmaceutical bodies named above and one by the American Council on Education. It is scarcely conceivable that the men will not be men representative of the highest idealism in American pharmacy. If one studies the present personnel of the Council, he must

conclude that if the best interest of our educational program is not safe in that group of men, where will we find a group in which it will be safe? I am frank in saying that the educational program of the American Association of Colleges of Pharmacy has had the loyal support of the National Association of Boards of Pharmacy. Many times in the last thirty years I have seen the educational line waver, but have seen it hold because of the support given it by the Boards of Pharmacy. The American Pharmaceutical Association has been loud in its lip service, but in reality that organization has never given the educational program in pharmacy a support comparable to that given by the American Medical Association to the medical educational program. But through the American Council on Pharmaceutical Education there is a great opportunity to do so and we are of the opinion that under the present leadership of that Association that will take place. The Editor is of the opinion that the American Council on Pharmaceutical Education will be a powerful influence for the improvement of our teaching institutions. The Editor cannot refrain from saying that he is happy in the thought that when an institution is not equipped and cannot become equipped for the proper teaching of pharmacy, the representatives of such an institution will have to discuss the problem with a group of level headed, fair minded men, and not with a group of temperamental schoolmasters of which he is a typical representative.

One of the most encouraging things that is taking place in pharmacy at the present time is the fine cooperation between boards of pharmacy and men representing schools of pharmacy. The Editor has seen it developing in the Fifth District, where outstanding men on the boards of pharmacy in the states of Minnesota, Iowa, Nebraska, and the Dakotas are a unit in standing for a higher type of pharmaceutical education and more rigorous legislation for the practice of pharmacy. And what makes it more satisfying is to find the retail druggists rallying around the same standards. As an example of what is going on in the east, you are referred to the article "State Support for Pharmaceutical Education—A Resolution" on the Editorial pages of the present issue. In the west the laymen have developed a pharmaceutical consciousness. This is because practically every state univer-

sity has a college of pharmacy and the taxpayer supports it by his money. He recognizes the need of pharmaceutical education as a part of the whole educational program. In the east pharmaceutical education is left very largely to student fees or private money. The layman in the east needs to do just what the laymen does in the west to make him realize that pharmacy offers a public health service that must be supported. I doubt if Dr. Fischelis and the Board of Pharmacy realize the importance of the movement they have started when they presented this resolution to the druggists of the State of New Jersey where it received unanimous support. That movement is bound to effect the support of pharmaceutical education on the whole Atlantic seaboard and not only that, it will be manifested in a finer support for pharmaceutical education in the south and west. You may recall from a report the Editor read at the last annual meeting that one of the questions for discussion now before the Conference, on professional Education of the American Council on Education is "How may universities be influenced in matters concerning professional education?" Dr. Fischelis has pointed the way to the answer, whether it be a state university or a privately endowed school.

In the "Gleanings from the Editor's Mail" pages, will be found two letters from Dr. Morris Fishbein. We appreciate the effort he has made, we like him better for his replies and agree with most of what he has said. We think he is right when he says we ought to make it clear who speaks for American pharmacy. That we are trying to do, but Dr. Fishbein should have had enough experience by this time in judging the character of medical literature, so we will not have to use kindergarten methods on him to teach him how to judge the character of pharmaceutical literature. The same principles apply to both. As regards the teaching of physiology to pharmacy students referred to in the review of Barber's text the reviewer is quite right. Our colleges of pharmacy would do well to heed that criticism and look to the strengthening of their biological program, which in many, I almost said most, is lamentably weak. The Editor, however, takes issue with any man who suggests that a professional student is taking about all the biological sciences, or any other group, that the remuneration which he will receive when he gets out will warrant. The medical men didn't let

that be their guide in building the medical curriculum. The way to better remuneration, is better professional training. A profession will stand still or fail because of lack of training, just as a business will stand or go into bankruptcy because of the lack of a little additional capital.

One of the outstanding events of the annual meeting at Minneapolis will be a panel discussion led by Dean E. R. Serles of the South Dakota State College. The central theme, as announced in the program in this issue, is the substance of the report of Miss Josephine Roche, who is head of the Interdepartmental Committee to Coordinate Health and Welfare Activities of the United States Government. The substance of the report is found in "The Cost of Adequate Medical Care", published by the University of Chicago Press. Miss Roche made her final report directly to the President of the United States and it contained the following important conclusions—"To the problem of medical care, is sickness insurance and federal or other subsidy, or both". In order to carry out this recommendation the FAC has authorized to sell to all clients of the Federal Government who are in any manner connected with the farm relief program, a membership costing one dollar a month per family, thus insuring all members for medical care, such as medical and dental and nursing service, and the cost of all drugs and drug sundries to the extent of \$250.00. A further ruling of the FAC advises that these funds shall be administered by the Federal Relief Director cooperating with such agencies as he shall deem proper in each state. It further provides that in the event sufficient funds are not available from the Federal Government, the charges against all services shall be prorated. Dean Serles writes "My personal opinion is that if the professional groups do not seek to solve this problem of the care of the indigent for themselves, the Federal Government will seek to enact such state and national legislation as will empower them to establish a system of Federal medical control. Whether or not this program will extend to the field of education is, of course, problematical, but without question, such a program cannot be established without having a definite effect upon certain phases of professional training". The Editor has given the substance of the report here, and Dean Serles' comments in order to make intelligent discussion by all, possible.

Rufus A. Lyman.

Gleanings from the Editor's Mail

I agree with you that the marihuana menace is greatly exaggerated. The plant grows in practically every state in the Union from Connecticut to California and would be just as impossible to eradicate as ragweed. I believe the Federal Bureau of Narcotics and certain reformers have done more, through their efforts at publicity, to encourage the smoking of this drug than anyone else.

It was reported that some of the school children in Baltimore were smoking marihuana cigarettes but the school authorities that are keeping close watch over the situation have been unable to find any evidence to this effect to date. I shall be pleased to write you a short editorial on the subject.

A. G. DUMEZ,
School of Pharmacy,
University of Maryland.

You deserve a great deal of praise for the vision which you had when you successfully engineered the plans which brought into existence the very worth while "American Journal of Pharmaceutical Education". It fulfills a distinct need in our pharmaceutical literature, and I am sure that subscribers have profited by the original papers, its news items and your own sound educational philosophy.

May I suggest that somebody in each state take it upon himself to secure subscriptions so that they, the examiners, may also become conversant with the hopes, aims and practices of pharmaceutical education.

ROLAND LAKEY,
College of Pharmacy,
Wayne University.

(The following excerpts were taken from a letter of inquiry by a high school student of Oakdale, Nebraska, under date of March 18, 1938, and addressed to the University of Nebraska. The inquiry is a proper one and is quoted here because it is a concrete example of the need of educating the public that pharmaceutical instruction can be obtained only in a college of pharmacy and the work in a liberal arts college or a Bible institute can not be accepted in place of pharmaceutical instruction in a college of pharmacy.—The Editor.)

What are the requirements for a license in pharmacy? Are they uniform throughout the states? What are the studies (and hours) required for the course?

John A. Shimonek, the superintendent of schools here, said that he believed it took five years of college under the latest requirements but that the first two years were a general preparation and therefore could be taken in any accredited school. If such is the case, would the University of Nebraska accept credits from the Minnesota Bible University, 1507 University Avenue, South East, Minneapolis, Minnesota, or Northwest Christian College, Eugene, Oregon?

EDWIN CARSTENSEN.

It was very kind of you to send me the review of my Textbook of Pharmacognosy. I am delighted to think that I have some of the qualifications necessary for Nebraska citizenship. As a matter of fact, I have often wondered if it would be possible to change places with a pharmacognosy lecturer in the United States of America for a term or so, so that I could see something of America and its students. Failing this I shall try to come over for a holiday during the next few years.

Your review comes somewhat late as the second edition is nearly sold out and the type is being set for a third. Have put in about forty new illustrations and estimate that I have written about 150 pages of new matter, whilst deleting about 80 pages of old. These alterations will I hope make the book much more useful to teachers in the United States of America. It will be on the market here about September first.

My correspondence with Professor Bienfang has been most interesting and I should welcome letters, particularly critical ones, from other American teachers.

G. E. TREASE,
School of Pharmacy,
University Park,
Nottingham, England.

(The excerpt printed below from a recent letter from Dean Lemon explains why so many subscribers fail to get their Journal. Most of these "lost copies" can be found by a little effort. It is easier to ask the Editor to replace them, but expensive to the Journal. We present Dean Lemon as an ideal for the action of others.—The Editor.)

Some member of my faculty must have found Numbers 3 and 4 of Volume 1 of my Journals so interesting that they just can't return them. So I am short those numbers and will appreciate it if you will forward same to me with bill. I want my file of Journals to be complete.

A. B. LEMON,
University of Buffalo.

I could not help but feel as I looked over the group of young women attending the Lambda Kappa Sigma Council in Boston, how fortunate many state conventions would be if they had in attendance as many regular qualified graduate pharmacists as are now present attending the convention. All these delegates, of course, are women, most of them in the active practice of pharmacy and I have never seen a more enthusiastic or high-type group of delegates attending any convention. I think that this speaks volumes for pharmacy and indicates clearly that women have as good a place in pharmacy as men. I am sure it would be an opportunity to a lot of our organizations of pharmacists if they had an opportunity to watch these young women at work at their national convention.

As far as pharmacy is concerned, I am much surprised to find practically no exclusive professional pharmacies in the eastern part of the country. Since leaving the middle west I have not come in contact with any exclusive prescription store. I think it is safe to say that this eastern country is years and years behind the west in this respect. I made inquiries in every large city that we have gone through and I have yet to see a drug store of the professional type, such as we have on the Pacific coast. I am looking forward to a visit to the Lascoff Store in

New York and will state that I had a very nice reception at the Seltzer Store in Detroit.

P. H. DIRSTINE,
State College of Washington.

(The following letter from Dr. Morris Fishbein is his reply to a letter sent him at the request of the Fifth District under date of April 8, 1938, and printed in the April number of the Journal (page 283). The original letter should be read in this connection. We think Dr. Fishbein is both fair and right in this statement.—The Editor.)

We have read with interest the letter by you and Mr. R. A. Kuever sent to us under date of April 8.

If you have followed the editorials which have appeared in the Journal, you will realize that in relationship to the Elixir of Sulfanilamide incident, we criticized physicians just as much as we did the pharmacists—in fact, more so. We still feel that there is no pharmacist that is justified in dispensing on prescription a product labeled "Elixir" without knowing that it is an elixir in the common definition of the word. To this extent the pharmaceutical profession must share in this disaster.

The editorial entitled, "Why Druggists Prescribe," seemed to be an inevitable comment on the article which appeared in the "American Druggist" called "A Billion Dollar Sneeze". Probably the "American Druggist" does speak for the pharmaceutical profession. However, the pharmaceutical profession should make that fact known.

MORRIS FISHBEIN.

(The Editor finds he is not alone in being peeved at a review of Barber's textbook of "Physiology for Pharmaceutical Students," appearing in a recent number of the Journal of the American Medical Association. The following note was received under date of April 19.)

See Journal American Medical Association, March 5, page 764, "Physiology for Pharmaceutical Students." Maybe a Presbyterian Elder can express it better than I can. I have had experience only in driving mules.

EDWARD SPEASE.

(The Editor and Elder has already expressed himself on the matter. The Journal, Number 2, page 273. His objection to the review was centered chiefly in the statement concerning the intelligence of the pharmacy student. Below is a letter from Dr. Morris Fishbein giving the reviewer's point of view. This letter was inspired by an objection to the review made to Dr. Fishbein by Dr. Leonard J. Piccoli of Fordham University. We can agree with the reviewer's point of view to a considerable degree.)

Dear Doctor Piccoli:

We referred your letter of March 21 to the reviewer of the book by Barber, entitled "Physiology for Pharmacy Students." The reviewer makes the following comment:

It seems that there is both a practical and a theoretical reason for the trend of the review. It is still a fact that the large majority of pharmacy students do not as yet receive as extensive a course as the correspondent's students are getting and it is still true that most phar-

macy students do not have the theoretical foundation for such a course. As to the future developments in pharmaceutical education, one may well ask how high should "higher education" for pharmacists go? In view of the prevailing low salary of pharmacists and kind of service pharmacists in general are called upon to render, investing a student's time to almost the same extent as would make a doctor of medicine of him hardly seems justifiable. A pharmacist, on the other hand, who wants to become a pharmacologist capable of performing drug assays needs more thorough training in physiology even than the book under discussion offers.

MORRIS FISHBEIN,
Editor, *Journal American
Medical Association.*

In my opinion the American Journal of Pharmaceutical Education is filling a dire need for the American Association of Colleges of Pharmacy. It gives the entire faculty of each college the opportunity of becoming acquainted with the annual meetings held by the Association. It stimulates a desire for more advanced and efficient teaching by publishing articles which aim to promote professional pharmacy.

I suggest the topic, "The Future Trend of Pharmaceutical Education" for discussion at our national meetings. Due to modern research in endocrinology, foods, vitamins and synthetic organic compounds, pharmacy is facing an additional change or advancement in order to keep up with the modern trend of medicine. Part of the time that has been allotted to such subjects as botany and pharmacognosy must of necessity be partly replaced by subjects such as biology, advanced bacteriology, and histology. Some colleges give two years in pharmacognosy without listing a course in biology. If the graduates efficiently fulfill their duties as public health servants, our pharmacy colleges must meet the educational demands for the advanced and new methods of therapy in medicine. The vitamins, biologicals, and endocrine therapy is no longer of questionable value in the therapeutic field. In many instances these products are specific therapeutic measures.

A. O. MICELSEN,
North Pacific College of
Oregon.

Thank you for the copy of your Journal and for the kind review of my book "Applied Pharmacology". I see that the reviewer has noted some rather terrible misprints of doses which unhappily escaped me when I was reading proofs.

I was interested in the articles on patent and proprietary medicines. I have just perpetrated a small popular volume on this subject and am sending you a copy by separate post.

Yours faithfully,
A. J. CLARK,
Pharmacological Laboratory,
University of Edinburgh.

Regarding something "in the form of a letter or editorial," I wonder whether it might be well to emphasize to the schools the duty they have to maintain an adequate supply of graduates to replace those dropping

out of the pharmaceutical ranks year after year. Notwithstanding the present business situation, we do not have a surplus of registered pharmacists in Philadelphia nor in Pennsylvania, and I believe that when the wheels of industry turn again the entire country will be faced with an acute problem due to the fact that we have built up a deficiency of about 8,000 registered men at the present time. We do not feel the shortage particularly now because there is not much money around and proprietors are operating with a minimum force, but if and when our democratic brethren release three billion dollars there will not be enough pharmacists to go around. If you see any merit in my suggestion I will be glad to supply you with the data upon which I base my thought.

H. EVERET KENDIG,
Temple University.

I was much pleased with Volume II, Number 2 of the American Journal of Pharmaceutical Education. The Journal seems to improve with each number, which arrived this week. I particularly enjoyed the personal items and the book reviews. You may well be proud of the Journal, although I know you will in no way be satisfied with achievements to date.

ERNEST LITTLE,
Rutgers University.

The reading of long reports that are frequently little more than records of routine matters sometimes makes our annual meetings rather dull affairs. We all know that hard working committees and carefully compiled reports are necessary to the progress of most organizations, certainly such as the American Association of Colleges of Pharmacy. However, we realize that in most instances well prepared summaries apt'y presented by the committee chairman, and accompanied by such interpolation as necessary, are ample. Such procedure would leave time for constructive discussions of the reports themselves, and for the introduction of topics that might well be threshed out on the floor. President Muldoon brought this out well in the April issue of the Journal.

We are venturing to mention certain topics which we believe must sooner or later have a place in our agenda. Among these: working conditions in retail pharmacy; 1940 revision of the United States Pharmacopoeia and the National Formulary; the place of pharmacy in the rapidly changing trends in the practice of medicine; and the place of pharmacy in preventive medicine and public health.

WORTLEY F. RUDD,
School of Pharmacy,
Medical College of Virginia.

It strikes me that someone should publish a book on pharmaceutical ethics similar to the one recently published on nursing. Another idea which has been thought provoking for me is that state boards should re-name the subjects for their examinations as well as designate clearly the work which each subject embraces in order that the candidates may know exactly what to expect under each examination. Also, the examinations should reflect more closely the curricula of the schools of pharmacy.

C. E. MOLLETT,
University of Montana.

Notes and News

Dr. Robert P. Walton, Professor of Pharmacology at the University of Mississippi, is a visiting lecturer in pharmacology at the University of Chicago during the present summer session. Dean Elmer L. Hammond of the University of Mississippi is doing graduate work at the University of Wisconsin during the present summer session.

On June eleventh a portrait of Dean Clair A. Dye was presented to Ohio State University. It is the work of Professor Robert M. Gatrell of the Department of Fine Arts and was financed by the Student Council of the College of Pharmacy. At the unveiling of the portrait President George W. Rightmire paid tribute to Dean Dye for his long and devoted service to the College of Pharmacy of Ohio State University. About two hundred and fifty alumni, students, and friends were present at the ceremony.

The Misses Jean and June Bush, identical twins, were graduated in June by the School of Pharmacy of the University of North Carolina. These young women were recently voted to be, not only the most popular but also the best all around graduates in the entire University. The voting was done by seven hundred seniors. "The Bush Twins" are indistinguishable in face, figure and manner of dress. They are equally good in scholarship, athletics and campus activities and they entered their four year course of study in pharmacy with grades that required a digit two places to the right of the decimal to show a difference in percentage. On June seventeenth they were licensed to practice pharmacy in the State of South Carolina and in the examinations for licensure their grade marks were identical.

Dr. Marvin R. Thompson, Emerson Professor of Pharmacology, School of Pharmacy, University of Maryland, has been named Director of the Warner Institute for Therapeutic Research at New York City. His successor at the University of Maryland will be Dr. Clifford Warren Chapman of Ottawa, Canada. Doctor Chapman had formerly held positions in biochemistry in the Medical School at London, Ontario and McGill University and was connected with the Institute of Public Health at London, Ontario for several years as chemical and bacteriological analyst. For the past ten years he has been the pharmacologist in the Laboratory of Hygiene, Department of Pensions and National Health at Ottawa, Canada.

Dr. Elmer M. Plein, formerly of the College of Pharmacy, University of Colorado and Dr. George R. Jones formerly of the University of Florida, have been appointed instructors in Pharmacy at the University of Washington. Of the forty seniors graduating in June, 1938, six of them have been admitted to medical schools for the coming year.

With the opening of the next school year Mr. L. G. Gramling, now doing graduate work at the University of Florida, will become assistant professor of pharmacology at George Washington University. Mr. J. A. Reese, Mr. L. D. Hiner and Mr. A. P. McLean, also graduate students at the University of Florida, will return to their respective former positions at the Medical College of Virginia, the South Dakota State College, and the Medical College of the University of Oklahoma.

Professor H. R. Bowers of the University of Southern California will do graduate work at the University of Chicago the coming year.

The Colorado Pharmaceutical Association has maintained two scholarships at the College of Pharmacy of the University of Colorado during the year 1937-38 and they plan to continue these scholarships during the year 1938-39. The Colorado Drug Travelers Association also plans to maintain a scholarship for this year.

Professor T. D. Rowe of the School of Pharmacy, the Medical College of Virginia, is doing graduate work at the University of Wisconsin. Dr. Fred P. Fletcher, graduate of the School of Pharmacy and also Medicine has been elected President of the several alumni associations of the College of Medicine. Professor Roscoe D. Hughes, a former graduate of Annapolis, but now an instructor in the Department of Columbia University, will join the faculty of the School of Pharmacy September first, taking the position formerly held by Dr. Richard A. Deno who has gone to the faculty of Rutgers University, College of Pharmacy. Dr. J. C. Forbes of the faculty has been elected chairman of the Virginia section of the American Chemical Society for the ensuing year. The centennial celebration of the Medical College was attended by one hundred and twenty-six delegates coming from all parts of the country. Dr. Henry Christian, a Virginian by birth, now Hersey Professor of Theory and Practice of Physic at the Medical School, delivered the chief address. Lloyd C. Bird of the pharmacy class of 1917 has been appointed chairman of the general committee to plan for the annual meeting of the American Association for the Advancement of Science to be held in Richmond during Christmas week of this year. The program of the Pharmacy Section of that meeting will be given up largely to a symposium on the glycals.

Miss Helen Creech of Purdue University will replace Mr. Albert Musick the coming year on the faculty of the School of Pharmacy of the University of Tennessee.

The Women's Auxiliary of the Oregon State Pharmaceutical Association annually gives a prize to the senior woman in pharmacy who has shown proficiency in scholarship, qualities of leadership and womanhood and success in student activities. This year the award went to Annette W. Budke. The North Pacific Branch of the American Pharmaceutical Association also gives a scholarship for excellency in school-work. This year it went to Frank R. Henry.

Dr. F. A. Gilfillan, for fifteen years professor of pharmacy, has been appointed acting dean of the School of Science, Oregon State College.

Three generations of pharmacists in the Wich family all graduates of the University of Maryland, attended the annual banquet of the Alumni Association on June second. They were Conrad L. Wich of the class of 1882, Henry E. Wich of the class of 1909 and J. Carlton Wich of the class of 1938.

Dr. H. H. Rusby, Dean Emeritus of the New York College of Pharmacy of Columbia University has been awarded the Fluchinger Gold Medal for 1937 by the National German Apothecary Association.

On May eighteenth a pharmaceutical conference was held at the University of Michigan. The central paper of the program was one by Dr. Robert L. Swain upon "What Should be the Objectives of a Modern Pharmacy Act?"

On June eighth memorial services were held at Fordham University, College of Pharmacy in memory of the late Dr. Jacob Diner who organized the College of Pharmacy. The alumni association presented the college with a memorial plate in memory of Dean Diner's services. Among the speakers was Dr. J. Leon Lascoff, president elect of the American Pharmaceutical Association.

On May fifth the students of Loyola University, College of Pharmacy organized a student branch of the American Pharmaceutical Association.

Approximately seven hundred high school students attended the sixth annual science day exhibit of the Philadelphia College of Pharmacy and Science on April ninth. On June seventh a testimonial dinner was given to Dean Ivor F. Griffith by a group of industrial and professional leaders of Philadelphia. At the one hundred and sixteenth commencement honorary degrees were granted to George W. Merk of Merk and Company, Marvin R. Thompson of the School of Pharmacy of the University of Maryland and Dr. Arnold Viehöver of the Philadelphia College of Pharmacy in recognition of distinguished service in their respective fields.

Dean Roland T. Lakey of Wayne University, College of Pharmacy, recently addressed the Detroit chapter of the University Women's Association and the Detroit Federation of Women's Clubs on the subject of Food and Drug Legislation and Professor F. D. Bradt spoke upon "Oddities of Medical Advertising" to an assembly of a thousand students of physical education in the University auditorium.

Dr. Charles F. Poe of the University of Colorado has been elected Grand President of Alpha Epsilon Delta, honorary pre-medical fraternity. Professor David W. O'Day is doing graduate work at the University of Iowa. Martin F. Schmidt has received the Strathcona Fellowship at Yale University for next year. Fred Drummond has been appointed to take the place of Dr. Elmer M. Plein of the University of Colorado.

At the June commencement of the West Virginia University, the honorary doctorate was conferred upon Roy Bird Cook because of the services he has rendered to the profession of pharmacy in that state and in the larger field of natural pharmaceutical education and legislation.

A feature of the commencement at the University of Illinois was the reunion of the 1888 and 1913 classes. The fifty year class was represented by Peter G. Hartz and Edward Granacher. Twenty-four of the original forty-one members of the 1913 class were present. Dean W. B. Day, on account of illness, was absent from commencement for the first time in forty-six years; few men have had such a record.

Dr. Charles O. Wilson of the University of Washington, Dr. Lee G. Gramling of the University of Florida and Mr. Frank Fortunato have been appointed to the departments of pharmaceutical chemistry, pharmacognosy and pharmacology at George Washington University.

Professor E. H. Beals will return to the University of Idaho and Professor H. Bang will return to the Washington State College after having spent a year in graduate work at Purdue University. J. V. Vaughan of Loyola University, S. J. Mittelstedt of Washington State College and D. C. Brodie of the University of Southern California have accepted assistantships at Purdue University for the coming year.

Nathan F. Sorg has been appointed an assistant in the College of Pharmacy of the University of Iowa for the coming year.

Albert P. Centolella has accepted a position as research chemist with The Upjohn Company. Ferdinand B. Zienty has accepted a research position with the Monsanto Chemical Company of St. Louis, Missouri. Dr. Ray A. Patelski, who has been Research Associate in the College of Pharmacy, the University of Michigan for two years, has accepted a position with the Charles Pfizer Chemical Company of Brooklyn, New York.

This year those interested in hospital pharmacy are planning for a prescription symposium in one of the sessions of the Section on Practical Pharmacy and Dispensing of the American Pharmaceutical Association. It is hoped by so doing, that the interest of retail professional pharmacists will be stimulated.

At the 1938 Des Moines meeting of District Number 5, a resolution was passed asking that all applicants for licensure, either by examination or reciprocity before the Board of Pharmacy, be required to present a certificate by a licensed practitioner, that he is free from communicable diseases of a severe nature and also free from chronic addiction to habit forming drugs.

Professor C. J. Zufall, who has been on leave of absence doing graduate work at the University of Wisconsin will return to Purdue in the fall.

A department of pharmaceutical chemistry and a department of pharmacology and pharmacy have been created in the Division of Pharmacy of the South Dakota State College.

Professor A. F. Nickel of the Alabama Polytechnic Institute addressed the Alabama Pharmaceutical Association on June 10. His topic was, "Pharmaceutical Education in the South". On June 2, Professor G. W. Hargreaves addressed the Alabama Association of Law Enforcement Officers at their annual meeting. His subject was "The History of Toxicology".

The Board of Control which has supervision over all of the public institutions in the State of Nebraska, except the University, has employed Miss Evelyn Hoyle who is a graduate of the College of Pharmacy, to supervise the purchasing of all drugs, chemicals and medical supplies for the state institutions. The volume of the drug and medical supply business amounts to about \$40,000 a year and the Board of Control felt the necessity of placing such supervision in the hands of a trained pharmacist in order that a better and more intelligent service might be given the institutions under their control. Professor C. L. Wible, who has been on leave from the College of Pharmacy of the University of Nebraska doing graduate work at the University of Texas, will return to his position in September. Dr. R. A. Lyman was guest speaker at the annual banquet of the students of the School of Pharmacy of the Medical College of Virginia on May 4; his subject was "The Romance of Pharmaceutical Education". William G. Clayton, a junior in the University of Nebraska, College of Pharmacy, was editor of the 1938 *Cornhusker*, the annual yearbook of the University. Edwin Lee Smith, who obtained a master's degree in physiology and pharmacology at the University of Nebraska in June, has been given a scholarship in the Department of Physiology at the University of Chicago and will do graduate work there the coming year.

On May sixth the Division of Pharmacy of the North Dakota State College held its annual open house exhibit. The exhibit demonstrated all phases of pharmaceutical activity at the institution. The North Dakota Pharmaceutical Association, assisted by representatives from the Division of Pharmacy, made an exhibit of official pharmaceutical preparations at the North Dakota State Medical Association held at Bismarck in May. They also contributed the services of Dr. Bernard Fantus of Chicago, who discussed the subject of prescription writing.

The College of Pharmacy of the University of Minnesota has presented the following guest lecturers to the student body and faculty during the winter and spring quarters of 1937-38: Dr. Frank J. Heck, The Mayo Clinic, Rochester; Dr. F. F. Blicke, The University of Michigan; Dr. J. D. Ralston, Parke, Davis Company of Detroit; Dean R. A. Lyman; The University of Nebraska; Director Emeritus Edward Kremers, The University of Wisconsin; Keith K. Keller, retail pharmacist of Minneapolis, and Dr. Robert Page, Burroughs-Wellcome and Company, New York City.

Through the Extension Division of the University of South Carolina, the School of Pharmacy is conducting an educational program which has as its object the giving of information to physicians and pharmacists about the United States Pharmacopoeia and National Formulary products. Such a program should eventually bring about a better co-operation and understanding between the two professions. The plan was approved by both the State Pharmaceutical and State Medical Associations at their recent meetings and also by the State Board of Pharmacy and the State Medical College.

The official name of the pharmaceutical organization within the University of Wisconsin has been changed from "The Course in Pharmacy" to "The School of Pharmacy."

Dean Edward Spease has been named on the program committee of the Subsection on Pharmacy of the American Association for the Advancement of Science to take the place of Dean Lyman whose term expires. That committee as now constituted is made up of Dean Rudd, chairman, Dr. Glenn L. Jenkins of the University of Minnesota and Dean Spease of Western Reserve.

Mr. Hugh Vincent of the State College of Washington, School of Pharmacy, is doing graduate work this summer in pharmacology at the University of Minnesota. Dean and Mrs. P. H. Dirstine are spending the summer visiting drug stores, manufacturing plants, and schools of pharmacy throughout the east and central states.

The Syllabus Committee has a number of copies of the Second and Third Editions of the Pharmaceutical Syllabus which it would like to dispose of. Any person or school desiring a copy in order to complete the series published to date may have these editions by sending twenty-five (25) cents per copy to cover the cost of packaging and mailing.

HENRY M. BURLAGE, Chairman.

MISCELLANEOUS ITEMS OF INTEREST

The American Association of Colleges of Pharmacy

Thirty-Ninth Annual Meeting

OFFICERS

President, Hugh C. Muldoon; Secretary-Treasurer, Zada M. Cooper;
Chairman of the Executive Committee, Ernest Little.

MONDAY, AUGUST 22

9:00 A. M. Meeting of the Executive Committee.
9:30 A. M. Meeting of Teachers' Conferences.
1:30 P. M. First Session—Business.
6:30 P. M. Annual Dinner.
8:00 P. M. Second Session—Panel Discussion.

TUESDAY, AUGUST 23

9:30 A. M. Joint Session of the American Pharmaceutical Association, the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy.
2:00 P. M. Third Session—Business.

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Sessions of the Association

FIRST SESSION, MONDAY, AUGUST 22, 1:30 P. M.

1. Roll Call.
2. Appointment of Committee on Resolutions.
3. Address of the President, Hugh C. Muldoon.
4. Report of the Secretary-Treasurer, Zada M. Cooper.
5. Report of the Executive Committee, Ernest Little.
6. Appointment of Nominating Committee.
7. Appointment of Auditing Committee.
8. Reports of Standing Committees:
 - (1) Committee on Educational and Membership Standards, A. G. DuMez.
 - (2) Committee on Curriculum and Teaching Methods, Henry M. Burlage.
 - (3) Committee on Activities of Students and Alumni, Edward J. Ireland.
 - (4) Delegates to the American Council on Education, Rufus A. Lyman.

- (5) Committee on Relation of Boards and Colleges, H. Evert Kendig.
- (6) Committee on Libraries, Charles O. Lee.
- (7) Committee on Problems and Plans, Rufus A. Lyman.

ANNUAL DINNER, MONDAY, AUGUST 22, 6:30 P. M.
Address by Dr. T. R. McConnell.

SECOND SESSION, MONDAY, AUGUST 22, 8:30 P. M.
PANEL DISCUSSION
Leader, Earl R. Series.

How Would the Development of a System of Socialized Medicine as Recommended by Miss Roche Affect the Future of:

- 1. Retail Pharmacy (with reference to the number of outlets now established), Leslie M. Ohmart.
- 2. Curricula of Colleges of Pharmacy, Glenn L. Jenkins.
- 3. Pharmaceutical Research, L. Wait Rising.
- 4. Pharmaceutical Legislation, Ralph E. Terry.
- 5. Public Health, Leonard J. Piccoli.
- 6. The Scope and Cost of Professional Service, Edward D. Davy.

THIRD SESSION, TUESDAY, AUGUST 23, 2:00 P. M.

- 1. Recommendations from the Teachers' Conferences.
- 2. Report of the Editor of the American Journal of Pharmaceutical Education, Rufus A. Lyman.
- 3. Reports of Special Committees:
 - (1) Committee on Food and Drug Legislation, Charles B. Jordan.
 - (2) Committee on Predictive and Achievement Tests, Carl J. Klemme.
 - (3) Committee on Professional Relations, George C. Shicks.
 - (4) Committee on Revision of Constitution and By-Laws, A. G. DuMez.
- 4. Reports of Special Representatives:
 - (1) Biological Abstracts, Heber W. Youngken.
 - (2) Representatives to the National Drug Trade Conference, J. Lester Hayman.
 - (3) Representatives to National Conference on Pharmaceutical Research, A. John Schwarz.
 - (4) Representatives to the Druggists Research Bureau, Paul C. Olsen.
 - (5) Representative to the National Association of Retail Drug-gists, Arthur F. Schlichting.
- 5. Report of the Historian.
- 6. Report of the Committee on Resolutions.
- 7. Report of the Auditing Committee.
- 8. Unfinished Business.
- 9. Miscellaneous Business.
- 10. Election of Officers.
- 11. New Business.
- 12. Executive Session.

Joint Session of the American Pharmaceutical Association, the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy

TUESDAY, AUGUST 22, 9:30 A. M.

Report of the Fairchild Scholarship Committee, E. G. Eberle.
Report of the Committee on Pharmaceutical Syllabus, Henry M. Bur-lage.
Report of the American Council on Pharmaceutical Education, A. G. DuMez.
Report of the Committee on Status of Pharmacists in the Government Service, H. Evert Kendig.
Report of the Committee on Degrees, Charles B. Jordan.
Report of the Committee on Modernization of Pharmacy Laws, Robert L. Swain.
Address, "Public Support of Professional Education," Henry C. Byrd.

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Conference of Teachers of Pharmacy

OFFICERS

Chairman, L. Wait Rising; Vice-Chairman, William A. Jarrett; Secretary, Elmer L. Hammond.

PROGRAM

MONDAY, AUGUST 22, 9:30 A. M.

1. Teaching of a Technician's Course for a Pharmacist, D. B. R. Johnson.
2. The Use of the Library in Undergraduate Instruction, Edward J. Ireland.
3. The Use of the Library in Undergraduate Instruction, William A. Jarrett.

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Conference of Teachers of Chemistry

OFFICERS

Chairman, Justin L. Powers; Vice-Chairman, Arthur Osol; Secretary, Gordon A. Bergy.

PROGRAM

MONDAY, AUGUST 22, 9:30 A. M.

1. Significance of Correlations between Predictive and Achievement Tests, Charles H. Rogers.
2. The Objectives of Pharmaceutical Quantitative Analysis, Arthur E. James.
3. Qualifications of One Prepared to Teach Pharmaceutical Chemistry, Lawrence H. Baldinger.
4. Simple Experiments to Impress Students, Charles W. Bauer.

5. Informal Round Table Discussion on Current Problems, Justin L. Powers.
6. An Attempt to Provide for Individual Differences in Analytical Chemistry, Ray S. Kelly.

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Conference of Teachers of Pharmacognosy and Pharmacology

OFFICERS

Chairman, Forest J. Goodrich; Secretary, Marin S. Dunn.

PROGRAM

MONDAY, AUGUST 22, 9:30 A. M.

1. Teaching of the Laboratory Course in Pharmacognosy, Ralph D. Bienfang, L. D. Darbaker, Heber W. Youngken, William J. Bonsteel.
2. Teaching of the Laboratory Course in Pharmacology, B. V. Christensen, James M. Dille, James C. Munch, Arno Viehoefer.

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Conference of Teachers of Pharmaceutical Economics

OFFICERS

Chairman, Ralph W. Clark; Secretary, Frederick D. Lascoff.

PROGRAM

MONDAY, AUGUST 22, 9:30 A. M.

1. Teaching the Commercial Aspects of Endocrines, William H. Stoner.
2. Business Training for the Pharmacy Student from the Retailer's Point of View, Nathan Zonies.
3. Teacher, Study Your Market, Ralph W. Clark.
4. Commercial Problems of Professional Pharmacy, Frederick D. Lascoff.
5. Commercial Ethics, Roland T. Lakey.

Notice of the Annual Meeting and Presenting Proposed Changes in the Constitution and By-laws

It seems but a few days ago that we said "good-bye" to our friends at the Pennsylvania Hotel in New York City, and now we find that the 1938 convention is "just around the corner".

We always hope for a good attendance and are seldom disappointed in this regard. This year, it seems more necessary than ever before that our member colleges be well represented at our various meetings. Many recommendations of unusual importance will be brought up for discussion and action. It is essential that you be there in order that

we may know how you feel about matters vital to the future of your school and your profession.

President Muldoon has been unusually helpful in building up a program which, I believe, will be received as one of the strong programs of the past decade.

Monday evening following our banquet, we shall have for the first time a panel discussion, presided over by Dean Serles and participated in by many of the younger men in the Association. We believe that this program will prove successful. In any event, it is worthy of trial. A large attendance and free discussion is essential.

An unusually important executive session is scheduled for Tuesday afternoon. There will be at least a half dozen matters of vital importance to you which must be settled at that time. Can we depend upon your being there?

Recommendations outlining profound and far-reaching amendments to the Constitution and By-laws will also be received. You perhaps recall that last year President Crockett appointed a committee consisting of Professor Zada M. Cooper, Dean C. B. Jordan, and Dean A. G. DuMez, Chairman, to study the Constitution and By-laws for the purpose of revision to bring them into conformity with the standards for accreditation of colleges of pharmacy adopted by the American Council on Pharmaceutical Education. This committee now recommends that our present Constitution and By-laws be amended as follows:

AMENDMENTS TO THE CONSTITUTION

Article 3. Paragraph 2. Strike out all of Paragraph 2, and substitute therefor, "The title, college of pharmacy, shall be interpreted as designating an incorporated college of pharmacy; or a school, college, or department of pharmacy in a state university, or in a regularly incorporated or legally empowered educational institution."

Article 4. In paragraph 1, after the word "membership", add "at the annual meeting."

Article 10. In paragraph 1, line 1, add after the word "business", "except the election of members".

AMENDMENTS TO THE BY-LAWS

Article 7. Strike out all subject matter from Items 1 to 12 inclusive and substitute therefor the following:

1. An applicant for membership in this Association must be an incorporated college of pharmacy; or a school, college or department of pharmacy in a state university, or in a regularly incorporated or legally empowered educational institution.

2. Application for membership in this Association must be accompanied by a recommendation for approval obtained from the state university, or of the state department of education, or of the state pharmaceutical association of the state in which the college is located; and by a copy of the latest catalogue. Application forms indicating the information required will be furnished by the Secretary of the Association.

3. The college must have functioned as a teaching institution for a sufficient length of time to have its full curriculum in operation prior to the date of making application for membership.

4. The financial status of a college will be judged in relation to its educational program.

The factors which will be considered in determining the adequacy of financial support are: (a) expenditure per student for education purposes; (b) the extent to which the institution is dependent upon student fees; (c) the stability of financing as indicated by the amount of income per student from stable sources, and the avoidance of burdensome indebtedness; (d) procedures used in financial accounting and reporting.

It is desirable that at least half of the income should be derived from stable sources other than student fees, i. e., permanent endowments, state appropriations, etc. After 1944, at least 20 per cent of the income must be from sources other than student fees.

In general, the minimum annual expenditure per student for instructional purposes shall not be less than \$200.00, except where the college is an integral part of a recognized university and the annual per capita expenditure for pharmacy students, although less, is commensurate with that made by other departments of the university, and is deemed by the Executive Committee to be adequate.

A budget of receipts and expenditures shall be prepared annually, and shall be open to inspection by the authorized representatives of the Association.

5. No college will be admitted to membership which is conducted for profit, either to individuals or to a corporation, whether in the form of unduly large salaries, or rentals, etc., or of profit for direct distribution.

6. (a) The college must be headed by a dean or other executive officer whose authority is delegated to him by the regents, trustees, or directors in order that responsibility may be definitely placed for the proper operation of the institution.

(b) The foregoing shall be interpreted as including responsibility for the character, organization and administration of courses for graduate, as well as undergraduate students; except in the case of universities in which there has been established a special organization for the management of graduate work. In the latter case, the special organization, insofar as it pertains to the graduate work in pharmacy, should function with the approval and cooperation of the dean of the college of pharmacy.

7. (a) The voting faculty shall hold stated meetings, at which the dean and members may confer on matters pertaining to the operation of the college and the promotion of its interest. If the college is an integral part of a university, regularly conducted meetings of the university faculty will be accepted as meeting this requirement, provided the members of professorial rank in the college of pharmacy are voting members of said faculty.

(b) Minutes of the meetings showing the subjects considered and any votes thereon shall be kept.

8. The college shall have in operation an adequate system of keeping records of students. To be adequate, a system must give full and accurate information on the educational record of a student previous to entrance to the college, and on the record made by the student during the entire period of his attendance at the college, including conditions,

failures, suspensions, dismissals, expulsions, disciplinary action, etc. When a transcript of a student's record is issued to another college, it shall be complete, including entrance qualifications and a record of any disciplinary action that has not been satisfied. If the college is a part of a university, the keeping of records and issuing of transcripts may be done in the general office provided by the university for that purpose.

9. (a) The college shall publish annually, or biennially, provided no change has been made during the period, a catalogue or announcement in which the college calendar, members of the teaching staff, requirements for the degrees offered, names and descriptions of courses, together with the names of the members of the teaching staff responsible for such courses, are clearly stated. The number of clock hours of class and laboratory work, devoted to each course shall be clearly set forth, together with the semester or term credit accorded each.

(b) The "semester hour" shall be interpreted as representing one period of not less than fifty minutes of classroom work (lecture or recitation) per week for one semester. Three hours devoted wholly to laboratory work, or two hours of laboratory work with one hour of correlated reference or written work, shall be considered the minimum equivalent of one hour of classroom work. A "quarter hour" shall be taken as the equivalent of two-thirds of a "semester hour."

10. The college must possess a faculty which, in the judgment of the inspection committee, is sufficient in numbers and the members of which possess the qualifications needed to properly carry on the work undertaken by the college.

11. (a) The college must have on its staff at least one full-time teacher of professorial rank for each of the following subjects: (1) pharmacy; (2) pharmaceutical chemistry; (3) materia medica (pharmacognosy or pharmacology) and as many additional full-time or part-time teachers as may be necessary to carry on the work of the curriculum in a satisfactory manner.

(b) A full-time professor is interpreted as meaning a person of professorial rank who devotes at least ten half-days per week throughout the college year to teaching and associated duties or research.

(c) A part-time teacher is interpreted as meaning one who devotes the required hours for teaching to his particular subject or subjects, and in addition, is available for consultation by students or for other work when needed.

12. (a) In determining the competence of a faculty, consideration will be given to the kind and amount of education that the individual members have received, to their experience in educational and professional work, and to scholarship as evidenced by scientific or scholarly publications and contacts with professional and learned societies.

(b) Teachers of professorial rank shall have completed at least two years of study in their respective fields of teaching in a recognized graduate school, or an equivalent amount of technical or professional training or experience. Heads of departments and the dean shall have completed at least three years of such study or an equivalent amount of technical or professional training. In addition, they shall have had successful teaching and administrative experience.

(c) Teachers of the rank of instructor shall have completed at least

one year of study in a recognized graduate school or an equivalent amount of technical or professional training or experience.

(d) Assistants shall have as a minimum the training represented by the bachelor's degree.

(e) At least one-half of the faculty teaching the professional and applied subjects shall have qualified as registered pharmacists. As a general rule, all teachers under the chair of pharmacy shall have qualified as registered pharmacists.

13. As a general rule, teaching schedules must not exceed sixteen hours per week per teacher, and the number of students in a class (exclusive of lectures) must not exceed thirty. At least two clock hours of laboratory work shall be taken as the equivalent of one clock hour of didactic instruction.

14. For the present, a college shall demand for admission the satisfactory completion of a four-year course of not less than fifteen units in a secondary school approved by a recognized accrediting agency; or a qualifying certificate for college entrance issued by the state university, or state department of education, or other state department authorized to issue such certificates.

15. Students who are candidates for degrees shall not be admitted to courses leading to such degrees later than 30 days after the beginning of a session.

16. A student desiring to transfer from one college to another shall be required to present a transcript of his record and a certificate of honorable dismissal from the college he is leaving. If the above conditions are not complied with, the admittance of the student is optional on the part of the second college, provided all entrance requirements can be met.

17. The entrance credentials or a certified copy thereof, of each student enrolled must be kept on file in the office of the college or in the general offices of the university, and be open to inspection by officials of accrediting agencies and examining boards.

18. Students transferring from a college of pharmacy accredited by the Council may be admitted to advanced standing without examination and be given credit for that portion of the work of the first three years of the pharmacy curriculum which they have completed.

19. Students transferring from a recognized non-pharmacy college may be admitted to advanced standing without examination and be given credit for the work completed in the general cultural or foundational subjects of the pharmacy curriculum.

20. No more than one year of credit in time shall be given to any student applying for advanced standing from any institution other than a college of pharmacy, unless such credit shall be for graduate work in applied subjects done in a recognized graduate school or other educational institution.

21. In order that the training of the applicant for advanced standing may be equal to that of the members of the class which he seeks to enter, he shall be required to take those courses, if any, which the class has had but which he has not had, and such courses shall take precedence over the more advanced courses.

22. An applicant for advanced standing shall not be given more favorable classification than he would have received in the college from which he transfers.

23. (a) The pharmacy curriculum shall comprise not less than 3,200 clock hours of instruction of which at least 1,300 hours shall consist of laboratory work. Such instruction shall be given within a period of not less than four full college years of at least 32 weeks each, and shall be scheduled over a minimum of five days per week, in accordance with approved academic procedure. At least two months must elapse between each college year.

(b) A college may, with the approval of the Association, be permitted to shorten this time provided additional work is done in a regularly organized summer session in an approved institution and provided further that all the required hours have been completed.

24. The college shall include in its course of instruction oral lectures, recitations and personal laboratory work.

25. (a) In general, the latest edition of "The Pharmaceutical Syllabus" and of "Basic Material for a Pharmaceutical Curriculum" shall be followed as guides in the organization of the pharmaceutical curriculum.

(b) Approximately 50 per cent of the total number of hours in the curriculum shall be professional and applied subjects and the remainder of a foundational or cultural nature. The professional and applied subjects shall include the pharmaceutical chemistries, the strictly pharmacy and business subjects, and the closely allied scientific subjects such as pharmacognosy, pharmacology, drug analysis and biological assaying. The natural and biological sciences, English, economics, foreign languages, history, mathematics, psychology, etc., are classified as general, foundational or cultural subjects.

26. All subjects offered for the baccalaureate degree must be of collegiate grade. The general collegiate subjects must be taught in such a manner and under such conditions as to warrant credit in a non-pharmacy educational institution and to merit the admission of its graduates to standard graduate schools as candidates for advanced degrees in pharmacy or closely allied fields of science.

27. A college may give credit for work done in absentia in extension courses for academic, non-technical subjects only, provided such work has been taken in a recognized college or university which is a member of the Association of American Universities, or in one which is recognized by a regional agency approved by the Association of American Universities, and the credits of which are accepted for the baccalaureate degree by the state department of education in the state in which it is located. No undergraduate credit shall be given for work in pharmacy taken as an extension course, by correspondence, or in any other way than in residence.

28. (a) The degree of Bachelor of Science (B. S.) or Bachelor of Science in Pharmacy (B. S. in Phar.) and those degrees only, may be given for the completion of the four-year course of not less than 3,200 hours. It is understood that these degrees are awarded for work of collegiate standard such as it done in our better arts and sciences colleges.

(b) The degrees of Master of Science (M. S.), Master of Science in Pharmacy (M. S. in Phar.), Doctor of Philosophy (Ph. D.) or Doctor of Science (D. Sc.), may be given for work done in course, providing the requirements of standard graduate schools are fully met. Graduate

work in pharmacy shall be interpreted as meaning work done after the completion of the requirements for the baccalaureate degree in a college of pharmacy. Graduate credit may not be given for undergraduate courses in the subject in which the candidate for a higher degree is doing his major work.

(c) Before being awarded a degree, every candidate must be adjudged by the combined faculty as having made a satisfactory record in the courses offered for graduation and to be a person suitably equipped, morally and otherwise, for the profession he is about to enter.

29. It is recognized that rules governing attendance, promotion and graduation are usually developed from the individual experience of the colleges, hence absolute uniformity in this regard is not to be expected. The Association, however, holds that greater uniformity than obtains at present is desirable, particularly with regard to the rules for promotion and graduation, so that a better basis may be established for the prompt elimination from the colleges of those students who have intellectual, moral or other deficiencies which render them unfit for the practice of pharmacy.

30. The college shall possess or have unrestricted teaching privileges in class rooms and laboratories sufficient in number and size to accommodate in a satisfactory way the classes or sections of classes of the size usual to the college.

31. The classrooms shall be properly lighted, heated and ventilated and should be furnished with the usual equipment necessary for lectures and recitation work.

32. The laboratories shall be furnished and equipped for the particular purpose or purposes they are intended to serve, and there should be sufficient equipment and apparatus in each to permit students to work individually on all of the experimental work of the courses taught therein. Taken altogether there should be sufficient apparatus and equipment to properly carry on all of the experimental work of the scientific and professional courses announced in the annual catalogue. Such apparatus or equipment should be replaced or increased as needed from annual appropriations made specifically therefor.

3. (a) The college shall have a well selected library of not less than 3,000 volumes (standard reference books, text-books and periodicals) in addition to duplicates and public documents, bearing specifically upon the subjects taught. Approximately 2,000 of these volumes should pertain specifically to the professional and applied subjects of the pharmaceutical curriculum.

(b) The library should be catalogued and administered by a professionally trained librarian. It should be housed in quarters adequate in size to provide a reading room large enough to accommodate at least 15 per cent of the student body, and be open to students not less than seven hours per college day.

(c) In institutions of which the college of pharmacy is an integral part, the general library of the institution will be considered as meeting this requirement, provided it contains the number and kind of books, periodicals and other publications set forth above.

(d) A sum adequate for the upkeep and growth of the library should be spent annually in addition to that expended for maintenance.

34. An important test of a standard college is that it, or the institution of which it is a part, exercise proper supervision over fraternities, entertainments, athletics and all other extra curricular activities. The fostering of a student branch of the American Pharmaceutical Association or a student pharmaceutical society indicates that the spirit of the profession extends beyond the class room.

35. The educational policy of the administration, the thoroughness of scholarship, the presence of the scientific spirit, the soundness and inspiration of instruction, the quality of publicity indulged in, conservatism in awarding honorary degrees—indeed, the general tone of the institution, including students as well as faculty—are important items concerning which definite regulations can hardly be established, but to which the Association will give consideration in arriving at its final decision with respect to the acceptability of a college of pharmacy for membership.

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Section 7, article 14, states that no changes in qualifications for admission to membership in the Association shall be made unless the same has been presented in writing to the Association at a regular meeting or to the members of the Association by mail at least four months prior to its adoption. It would seem, therefore, that the proposed changes in our By-laws will need to be held over until a year from next August before a vote can be taken upon the suggested changes which are being made by our committee.

The proposed amendments to the Constitution can, however, be acted upon at the annual meeting in August, 1938, inasmuch as these have been submitted to the Chairman of the Executive Committee not later than forty days prior to the annual meeting of the Association and have been sent to the various member colleges at least thirty days prior to the annual meeting.

The recommendations which are being made by Dean DuMez's committee are fundamental and far reaching. I know that you will give the committee's suggestions very careful thought and study and be prepared to discuss them at the Minneapolis meeting.

ERNEST LITTLE, Chairman,
Executive Committee.

Report of the Committee on Libraries, American Association of Colleges of Pharmacy

The report of this committee is a continuation of the one made at the Dallas meeting a year ago. The introduction to that report has been printed. The appendix to the same report has remained in the hands of the committee for further study and correction. It is being presented to you again with such corrections and additions as the chairman has been able to make with the aid of the librarian at the Purdue University School of Pharmacy and the help of a faithful but inexperienced N.Y.A. worker.

Your chairman has done just enough work upon this project re-

cently to know that it is incomplete and full of errors. He believes that the association should place this in the hands of a "librarian-scientist" for correction and completion.

If this is impossible, the committee should share the responsibility of further preparing the report for publication, but it is more than a chairman's job.

The personnel of this committee was changed this year and the new members, through no fault of their own, have not gotten acquainted with this library waif. Most of them have heard about it and several have seen it and have expressed interest in seeing it taken care of in the proper way.

The project is that of preparing as complete a list as possible of all the journals of pharmacy, and those closely related to pharmacy in some essential aspect. In addition abbreviations for these are suggested since only the outstanding journals have acceptable abbreviations. The committee feels that abbreviations for journals which are found in the "List of Periodicals" abstracted by *Chemical Abstracts* should be retained. Our problem is to agree upon abbreviations for those journals which are frequently referred to but for which no abbreviations have been agreed upon. This is more than a committee job. It is one that needs the help of every member of the association and many others.

Your committee is also working upon a second project, that of preparing minimum lists of reference books and journals for our major divisions of study.

A minimum list of journals for teaching and research has been prepared by one member of the committee and is now in circulation for corrections, additions, and deletions. A second member has submitted a list of references upon botany and pharmacognosy. A third member has been asked to prepare a list upon pharmacy, and a fourth upon pharmaceutical chemistry. It will take time to do these jobs but we hope to have them ready before another year passes.

Another subject which the committee has under consideration is that of the exchange of duplicate library material. This is a difficult task and no method of solution has been offered. It is a library wide problem and is being carried on rather well in a limited way outside pharmacy circles. This will be given more thought during the year unless some one has a plan which is immediately operable to the benefit of all concerned.

Respectfully submitted,
C. O. LEE, Chairman.

The New Federal Food, Drug and Cosmetic Act

The new Federal Food, Drug and Cosmetic Act, just signed by President Roosevelt, was characterized recently by Secretary of Agriculture Henry A. Wallace as a great step forward in the protection of the American public. "It broadens the scope of the old law and, in many respects, reinforces those provisions which have stood the test of time," said Secretary Wallace. "It will benefit also the honest manufacturers who are entitled to governmental protection against unethical competitors.

"The Act will stand as a legislative monument to the memory of the late Senator Royal S. Copeland of New York, who fought for a really effective measure throughout the five-year struggle over revision of the Act of 1906. Credit must also go to many other members of Congress, to consumer groups, and to those enlightened trade organizations which have an interest in the welfare of the consumer.

"Because of the five-year struggle to get the new bill through Congress, many persons are confused as to its merits," the Secretary said. "This is not surprising," he added, "as there have been many versions of the bill, some of which contained provisions wholly unsatisfactory. While the bill is not perfect, the Conference Committee corrected the principal points of difference in such a fashion that I wholeheartedly recommended that the President sign the bill."

The new act goes much farther than the old law in that it contains positive requirements for informative labeling in the interest of consumers in addition to the negative prohibitions against mislabeling contained in the old statute. The new act amplifies and strengthens the provisions designed to safeguard the public health and prevent deception, and extends the scope of the law to include cosmetics, therapeutic devices, and certain drugs that now escape regulation.

The general provisions of the new law become effective one year from the date of its signature by the President. Certain provisions, however, become effective immediately. These include the prohibition against the introduction of new drugs before they have been tested; the prohibition against drugs which are dangerous to the consumer when used as prescribed on the label; the prohibition against cosmetics which may be injurious to users.

Important respects in which the measure differs from the present law are:

1. The new law has jurisdiction over all cosmetics except toilet soaps. This means that the American public will be protected against dangerous cosmetics such as eyelash dyes that have been known to cause blindness.
2. Brings therapeutic devices under control. In the past, many curative claims have been made for devices such as electric belts which have no value.
3. Regulates drugs intended for diagnosing illness or for remedying underweight or overweight, or otherwise affecting bodily structure or function. Included in this group are the so-called "slenderizers," many of which have caused blindness and death.
4. Requires adequate testing of new drugs for safety before they are put on the market. The elixir of sulfanilamide which caused the death of nearly 100 persons last year emphasized dramatically the need for this provision.
5. Provides for the promulgation of definitions and standards for foods. The old law contained no such authority except for canned foods. This means that the definitions and standards which under the old law were not binding, but merely advisory, will now have legal force and effect.
6. Increases penalties for violations. Under the old law the maximum fine for the first offense was \$200. Under the new act a first offense may be punished with a fine of \$1,000 or one year imprisonment

or both. For subsequent offenses under the old law the maximum fine was \$300 or one year imprisonment or both. Under the new law this penalty is increased to a maximum of \$10,000 or three years imprisonment or both. Even for first offenses where the court finds evidence of fraud or deliberate intent to violate the act the maximum penalties are \$10,000 fine or three years imprisonment or both.

7. Provides authority for the Federal courts to restrain violations by injunction.

8. Eliminates the necessity for proving fraudulent intent in the labels of patent medicines. Under the new law any such medicine proved to be worthless may be removed from the market.

9. Requires drugs intended for use by man to bear labels warning against habit formation if they contain any of a list of narcotic or hypnotic habit-forming substances, or any derivative of any such substance which possesses the same properties.

10. Requires the labels of non-official drugs (those not listed in the Pharmacopoeias and Formulary) to list the names of the active ingredients, and, in addition to show the quantity or proportion of certain specified substances.

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Digest of the New Federal Food, Drug, and Cosmetic Act

The new Federal Food, Drug, and Cosmetic Act became law on June 25, 1938, when it was signed by the President. Its general provisions will become effective 1 year from that date. Certain provisions, which will be discussed later in this article, become effective immediately.

The new law preserves the worthy features of the Federal Food and Drugs Act of June 30, 1906. In its principal differences from the old law it:

1. Brings all cosmetics except toilet soap under control [sec. 201(i)]; outlaws cosmetics which may be injurious to users, except poisonous coal-tar hair dyes which bear warning labels [sec. 601(a)]; prohibits false or misleading labeling [sec. 602(a)].

2. Prohibits traffic in food which may be injurious to health [sec. 402(a) (1)]. (The old law prohibits injurious food only when the poisonous substance is added.)

3. Prohibits the addition of poison to food except where such addition is required in the production thereof or cannot be avoided by good manufacturing practice; where added poisons are so required or cannot be so avoided, tolerances are authorized limiting the amount to a point insuring protection of public health [sec. 402(a) (2), sec. 406(a)].

4. Authorizes emergency permit control of food that may be injurious because of contamination with microorganisms, if public health cannot otherwise be protected [sec. 404].

5. Forbids traffic in confectionery containing metallic trinkets and other inedible substances [sec. 402(d)].

6. Specifically requires label declaration of artificial coloring, artificial flavoring, and chemical preservatives in food, but exempts butter, cheese, and ice cream from this requirement in so far as artificial coloring is concerned [sec. 403(k)].

7. Requires labeling of special dietary food to inform purchasers fully of its vitamin, mineral, and other dietary properties [sec. 403(j)].
8. Provides for the promulgation of a definition and standard of identity and a reasonable standard of quality and fill of container for each food, but exempts from this provision fresh and dried fruits and vegetables, except avocados, cantaloupes, citrus fruits, and melons [sec. 401, sec. 403(g), (h)]. Butter is also exempt from this provision, but the act preserves the statutory definition and standard of identity for butter which became law in 1923 [sec. 902(a)]. (The old law contains no authority for the establishment of definitions and standards of identity, and the authority to establish standards of quality and fill of container is limited to canned foods.)
9. Requires the labeling of food for which no definition and standard of identity has been fixed to disclose the ingredients by name, except spices, colorings, and flavorings, which may be declared simply as spices, colorings, and flavorings. Authorizes regulations prescribing exemptions from this requirement where compliance is impracticable or results in deception or unfair competition [sec. 403(i)].
10. Does not contain the "distinctive name" joker of the old law under which any mixture or compound of food not injurious to health can escape control.
11. Brings under control drugs used in the diagnosis of disease and drugs intended to affect the structure or any function of the body [sec. 201(a) (2), (3)].
12. Brings therapeutic devices under control, and subjects them to the same general requirements as are set up for drugs [sec. 201(h), secs. 501, 502].
13. Prohibits traffic in drugs and devices which are dangerous to health under the conditions of use prescribed in the labeling [sec. 502(j)].
14. Prohibits traffic in new drugs unless such drugs have been adequately tested to show that they are safe for use under the conditions of use prescribed in their labeling; authorizes exemption from this requirement of drugs intended solely for investigational use by qualified scientific experts [sec. 505].
15. Makes the Homeopathic Pharmacopœia of the United States the legal standard for homeopathic drugs [sec. 201(j), sec. 501(b)].
16. Requires labels of official drugs—i. e., drugs recognized in the United States Pharmacopœia, National Formulary, or Homeopathic Pharmacopœia of the United States—to reveal any differences of strength, quality, or purity from the official standards [sec. 501(b)]. (The old law requires merely that the label bear a true statement of the strength, quality, and purity of the drug, without showing the difference from the official standard.)
17. Requires drugs intended for use by man to bear labels warning against habit formation if they contain any of a list of narcotic or hypnotic habit-forming substances, or any derivative of any such substance which possesses the same properties [sec. 502(d)].
18. Requires the labeling of drugs and devices to bear adequate directions for use, but authorizes regulations exempting drugs and devices from this requirement where it is not necessary for the protection of the public health [sec. 502(f)].

19. Requires the labeling of drugs and devices to bear warnings against probable misuse which may be dangerous to health [sec. 502(f)].
20. Requires special precautionary labeling for drugs that are liable to deterioration [sec. 502(h)].
21. Does not contain the fraud joker in the old law under which the Government must prove that false claims of curative effect on the labels of patent medicines were made with willful intent to deceive.
22. Requires official drugs to be packaged and labeled as prescribed by the Pharmacopeias and Formulary [sec. 502(g)].
23. Declares non-official drugs illegal if the standard of strength thereof differs from the standard claimed [sec. 501(c)]. (The old law prohibits only those which *fall below* the strength claimed.)
24. Requires that antiseptics possess germicidal power [sec. 201(o)].
25. Requires the labels of non-official drugs to list the names of the active ingredients, and in addition to show the quantity or proportion of certain specified substances. Authorizes regulations prescribing exemptions from this requirement where compliance is impracticable [sec. 502(e)].
26. Proscribes the use of containers for food, drugs, and cosmetics which may render the contents injurious to health [sec. 402(a) (6), sec. 501(a) (3), sec. 601(d)].
27. Prohibits traffic in food, drugs, and cosmetics which have been prepared or handled under insanitary conditions that may contaminate them with filth or that may render them injurious to health [sec. 402(a) (4), sec. 501(a) (2), sec. 601(c)].
28. Forbids the use of uncertified coal-tar colors in food, drugs, and cosmetics, other than hair dyes [sec. 402(c), sec. 501(a) (4), sec. 601(e)].
29. Proscribes slack filling of containers for food, drugs, and cosmetics, and prohibits the use of deceptive containers [sec. 403(d), sec. 502(i) (1), sec. 602(d)].
30. Authorizes factory inspection of establishments producing food, drugs, devices, and cosmetics for interstate shipment [sec. 704].
31. Provides for the procurement of transportation records and other documents necessary to establish Federal jurisdiction [sec. 703].
32. Requires that part of samples collected by the Government for analysis be given to the manufacturer on request, but provides exemption from this requirement to the extent necessary for proper administration of the act [sec. 702(b)].
33. Authorizes the Government to charge fees for the certification of coal-tar colors in amounts necessary to defray the expenses of the service [sec. 706].
34. Specifically authorizes abatement of administrative proceeding in minor violations through written notice or warning from the enforcing agency when the public interest can thus be adequately served [sec. 306].
35. Provides increased criminal penalties for violations [sec. 303].
36. Authorizes the Federal courts to restrain violations by injunction [sec. 302].
37. Limits seizure for misbranding to a single interstate shipment of the product unless the misbranding has been the subject of a prior

court decision in favor of the Government, or unless the misbranded article is dangerous to health, or its labeling is fraudulent or would be in a material respect misleading, to the injury or damage of the purchaser or consumer [sec. 304(a)]. Authorizes consolidation of multiple-seizure cases (seizures of two or more interstate shipments of identical goods from the same shipper) for trial in a single jurisdiction [sec. 304(b)]. Also authorizes such consolidated cases, as well as cases involving seizure of a single interstate shipment for misbranding, to be removed for trial to any district agreed upon by stipulation between the Government and the shipper or owner of the seized goods. In case of failure to reach an agreement, the shipper or owner of the goods may apply to the court in which the seizure was made, and the court is required, unless good cause to the contrary is shown, to specify a district of reasonable proximity to the applicant's principal place of business in which the case will be tried [sec. 304(a), (b)]. (The old law places no limitation on the number of shipments of illegal goods which may be seized; contains no provision for change of venue for trial; and seizures thereunder are tried in the districts in which the seizures occur, which ordinarily are the districts to which the goods have been shipped for sale and consumption.)

38. Provides for a judicial review in United States Circuit Courts of Appeals to determine the validity of certain regulations. This form of review is an addition to and not in substitution for any other remedies provided by law [sec. 701(f)].

Immediately upon approval of the act by the President, the following prohibitions therein became effective [sec. 901(a)]:

The prohibition against drugs which are dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended or suggested in the labeling [sec. 502(j)].

The prohibition against the introduction of new drugs before an application for such introduction becomes effective [sec. 505].

The prohibition against cosmetics which may be injurious to users under the conditions of use prescribed in the labeling or under such conditions as are customary or usual [sec. 601(a)]. However, poisonous coal-tar hair dyes which would be exempted under the proviso of this requirement if they bore the warning label prescribed by the statute, will not be subject to action by reason of their failure to bear the prescribed warning until 90 days after the date of approval.

The Pharmaceutical Syllabus and Its Revision. III.

The following additions to the personnels of the various subcommittees published in a previous issue of the Journal (April Number, pp. 309-311), and other subcommittees are reported at this time:

1. Accounting—Harvey P. Frank, Philadelphia; John N. McDonnell, Philadelphia.
2. Bacteriology—Fanchon Hart, Columbia.
3. Calculations of Pharmacy—R. R. Kreuer, Duquesne.
4. Dispensing Pharmacy—H. C. Newton, Massachusetts; W. J. Husa, Florida; L. W. Richards, Montana; G. Bachmann, Minnesota.

5. Inorganic Pharmaceutical Chemistry—H. G. DeKay, Purdue, Chairman.

6. New and Non-official Remedies (title subject to change)—Marvin J. Andrews, Maryland, Chairman.

7. On page 311 of the April issue of the Journal, the State Board members of the Syllabus Committee should be indicated as members of the subcommittee on State Board Questions.

Seven revised outlines have been received from the subcommittees and more will be received within the next few weeks according to reports from the various chairmen. While these outlines are tentative and have not as yet received the sanction of the Syllabus Committee they are being duplicated and mailed to the various schools, with the hope and expectation that the members of the teaching staffs of the respective schools who are teaching the subjects to which the outlines apply will examine them closely and offer suggestions to the Committee for their improvement. It is only by constructive criticism that the new edition of the Syllabus can be perfected.

A lengthy meeting of the general committee is being planned for the week of the convention of the American Pharmaceutical Association. At that time it is hoped that definite action can be taken on matters of policy, on acceptances and rejections of outlines and plans made for the issuance of the work during the next college year.

HENRY M. BURLAGE, Chairman.

A Second U.S.P. Supplement

At the recent meeting of the U.S.P. Board of Trustees, authority was given for the publication of the Second U.S.P. XI Supplement. It is hoped that this can be printed and released on January 1, 1939.

Preparation for the Supplement has been under way for months and Sub-Committee Chairmen will be in a position in the near future to submit reports on a number of revised texts. The Sub-Committee on Scope is also considering the admission of a number of additional important new drugs.

The members of our Committee are fully familiar with the outstanding advantages of the Interim Revision and Supplement features of the Pharmacopoeial program. This gives the opportunity to issue new standards after they have been subjected to extensive checking in many laboratories.

Our former decennial revision method compelled the consideration of between five and six hundred items simultaneously and then at the end of the revision period it became necessary to go to press with the entire lot, irrespective of the status of their revision. Of necessity, with some Sub-Committee chairmen handling from a hundred to a hundred and seventy-five separate monographs, it was impossible to give each article the exacting consideration and extensive review which has been possible under the new plan by which only a dozen or so monographs are under revision at one time.

The Supplement is also permitting the prompt recognition by the Pharmacopoeia of important new medicines and, as indicated above, this will be a feature of the Second Supplement.

The U.S.P. Board of Trustees modified the original plan for the issuance of *annual supplements* before the "First Supplement" was issued, on the ground that a more flexible plan seemed necessary. They became convinced that in some years circumstances might make it necessary to issue a new Supplement before twelve months had passed, while under other conditions an additional Supplement might not be required for several years. The Board therefore announced, through the medical and pharmaceutical press, about a year ago, that new U.S.P. Supplements would be issued whenever in the judgment of the Committee of Revision and Board of Trustees, conditions made this desirable.

The Pharmacopoeia Board or Committee of Revision are responsible only for the preparation of the official standards. Whether or not the Pharmacopoeia and its Supplements are purchased by retail pharmacists is, in some states, entirely optional. In other states where the State Law requires the possession of these books, it is a matter for the responsible state officials to enforce.

The U.S.P. finances are in excellent condition and the Board of Trustees has been able to meet the revision expenses of the decade, to greatly increase the research and conference programs, and to still hold its basic reserves intact.

In preparing the Second Supplement, every step will be taken to insure the carrying out of the requirements of the Convention for the preparation of an official text. It is expected that the revised, or new, monographs will be submitted in the form of proof to members of the Committee of Revision and given wide publicity. Following their publication, a public hearing will be granted at which members of the Executive Committee responsible for revised texts will be in attendance. Following the public hearing a conference with the officials of the Food and Drug Administration and the Public Health Service will be held, after which the members of the Committee of Revision will be given an opportunity to see and vote upon the finally approved text. When the Second U.S.P. XI Supplement has been issued, ample time will be given before it becomes official.

E. FULLERTON COOK, Chairman.

International Technical Commission of Pharmacopoeial Experts

At the recent session of the Health Organization of the League of Nations a Commission was appointed to carry on the work of the Brusse's Conference for the establishment of standards for potent medicines. The Committee consists of:

- Dr. C. H. Hampshire, Chairman (London)
- Professor H. Baggesgaard (Copenhagen)
- Professor V. E. Zunz (Brussels)
- Professor M. Tiffeneau (Paris)
- Professor R. Eder (Zurich)
- Professor L. van Itallie (Leyden)

Professor E. Fullerton Cook (Philadelphia)
A member of the Union of Soviet Socialist Republics.

The Brussels Conference was the outgrowth of earlier efforts to establish an International Pharmacopœia. In 1902 a group of pharmacists from Brussels, in the name of the Belgian Government, issued invitations to practically all nations of the world to participate in a conference for the purpose of establishing uniformity in the definition and strength of the more potent medicines in use throughout the world.

At that time, the Pharmacopœia of the United States was officially represented by Dr. H. C. Wood, Sr., then one of the leading pharmacologists of the world, and by Dr. Frederick B. Power. The Chairman of the Committee of Revision, Professor Joseph P. Remington, was at that time greatly interested in this international movement and in a contribution to the conference urged the practical policy of establishing standards meeting the approval of the conference and offering these to the Pharmacopœial Commissions throughout the world for voluntary adoption.

The importance of this at the time can scarcely be appreciated. In the U. S. Pharmacopœia the Syrup of Ferrous Iodide was 10 per cent; Tincture of Capsicum, 5 per cent; Tincture of Aconite, approximately 35 per cent; Tincture of Veratrum, 40 per cent; Tincture of Belladonna, 15 per cent. This conference established 10 per cent as the strength for all potent Tinctures and 20 per cent for Tinctures of non-potent drugs like Cinchona and Gentian, with 5 per cent for Syrup of Ferrous Iodide. The Eighth Revision of the U. S. Pharmacopœia, published in 1905, was the first National Pharmacopœia to adopt the standards of this International Protocol (P. I.) as recommended by the 1902 Brussels Conference.

A second conference was called for 1914, but was postponed because of the World War. The Second conference was finally assembled at Brussels in 1925, with representatives from more than 40 nations participating. Additional uniformity in standards and preparations was recommended at that time and the Conference adjourned after passing recommendations that its work be taken over by the Health Organization of the League of Nations.

The establishment of a Pharmacopœial Secretaryship, at the League, has been the basis for discussion for many years but the actual establishment of the program has only now been completed. The Chairman of the Committee, Dr. Hampshire, is the Secretary of the British Pharmacopœial Commission, which has recently published the First Supplement to the British Pharmacopœia.

This International Commission plans to compile a list of the more important medicines used throughout the world and invite the respective National Pharmacopœial Commissions in various countries to prepare model monographs, which when finally approved will be presented to the Pharmacopœial Commissions of the world with the hope that they may assist in bringing about greater uniformity in titles, definitions, descriptions, tests for identity and purity and methods of assay.

It is hoped that the International Commission may also be able to compile the Pharmacopœial literature of the world for the use of all

Pharmacopeial Commissions, thus avoiding the duplication of literature reviews by each nation.

It will, of course, be necessary in each nation to appoint associate members from their Pharmacopeial Committees to assist in the actual preparation of monographs.

E. FULLERTON COOK, Chairman.

Abstracts of Papers Given at Ottawa, Canada at the June 1938 Meeting of the Subsection on Pharmacy (N₂) of the American Association For the Advancement of Science

1. *Ultra-violet Fluorescence as an Aid in the Identification of Vegetable Drugs and Their Extracts.* Curt P. Wimmer. The author states that the use of ultra-violet fluorescence in nearly all manufacturing and analytic laboratories is constantly gaining in importance. Accordingly, the literature on this work is increasing at a rapid pace; it is estimated that over 2,500 papers on the subject have been published. One of the important fields in which the ultra-violet radiations have been put to excellent use is that of pharmacy and pharmacognosy. Too often is the chemist in these fields put before the almost impossible task of having to determine the identity of drug extracts or drug powders. Here the ultra-violet fluorescences may be employed to advantage. For this study twelve official drugs were selected at random, namely, belladonna leaf, belladonna root, cascara sagrada, ipecac, senna, lobelia, gelsemium, buchu, hamamelis leaf, sarsaparilla, nux vomica and cinchona. He describes the fluorescences of these drugs and of their respective fluidextracts; of a spot on filter paper; of their evaporation residue; of the ether extract and the 5 per cent sulfuric acid extract of the residues. He has also studied the fluorescence of the fluidextracts diluted with alcohol and other solvents and that of the acid liquid and the ether extracts, and finally, that of the matter insoluble in these solvents. From the results obtained it was possible to identify the fluidextracts when given as unknowns. In conclusion, the author points out that the work is as yet largely empirical and that it could and should be made of still greater value by placing it on a more scientific basis. To this end he suggests that a committee of persons interested in the work be appointed for the purpose of standardizing apparatus, method of observation, color terminology, etc. In view of the lack of such standards it is impossible to check results of other workers. This is a field for research that promises worth while results.

2. *The Assay of Thyrotropic Hormone.* A. S. Cook and C. M. Hayes. The use of chicks a day old as test animals for assay of pituitary extracts for thyrotropic activity has been investigated. Increased weight and histology of the glands were used as criteria of response. The results are compared with those obtained by the use of the guinea pig.

3. *Observations on the Cardiac Tonic Drugs—Apocynum and Con-*

vallaria. Heber W. Youngken and Raymond W. Vander Wyk. *Apocynum*.—While the National Formulary VI restricts the source of this drug to *Apocynum cannabinum*, the commercial article for many years has consisted of a mixture of varying proportions of the rhizomes and roots of *Apocynum cannabinum* and *Apocynum androsaemifolium* and frequently of the latter only. This was found to be true of samples of crude drugs obtained during 1938 from scattered sections of the United States. Microscopic examination of botanically authenticated specimens showed that stone cells are definitely absent in the rhizomes and roots of *Apocynum cannabinum* and always present in the organs of *Apocynum androsaemifolium*. Results of histological studies are also reported on the cork, starch grains, latex cells, tracheæ and medullary rays of both species.

Fluidextracts of the rhizomes and roots of both species were tested by the one hour frog method. It was ascertained that the minimum dose of *Apocynum androsaemifolium* is 85 mg. per kg. causing systolic standstill, or approximately six times the potency of digitalis, and that of *Apocynum androsaemifolium* on frogs is 225 mg. per kg. or approximately twice the potency of digitalis. The difference in potency between two species no doubt explains the inconsistent results which have been obtained from the use of this drug since the commercial drug may be one, or a mixture of both species. It is suggested that a standard of assay for *Apocynum* be introduced in the coming revision of the National Formulary.

Convallaria.—Studies were made on a number of commercial samples of convallaria obtained from dealers in scattered parts of the United States, and upon rhizomes and roots of *Convallaria majalis*. It was ascertained that from three to nine roots, root remnants, or root scars are present on each rhizome node. These may occur on all surfaces of the nodes, that the rhizomes may be of oblique as well as of horizontal growth. The endodermis of the rhizome consists usually of two, occasionally of one or three layers, of endodermal cells, the radial and inner walls of which are considerably more thickened than the outer walls and are lignified, whereas the endodermis of the root possesses cells whose radial and inner walls are slightly more thickened than the outer walls with Casparyan spots on the radial walls. Reticulate tracheæ as well as the spiral and scalariform types were found, as were also fiber-tracheids with slightly lignified walls and oblique pores. These are reported in *Convallaria* for the first time.

The foreign matter in the commercial drug samples consisted chiefly of *Polytrichum* and varied from 3.84 to 6.81 per cent. The acid-insoluble ash in four samples varied from 2.21 to 6.008 per cent.

4. *Some Recent Developments Concerning Vitamin E*. E. M. Warson and C. S. McArthur. There is evidence that procreation, in the rat at least, is dependent upon an accessory food factor, namely, vitamin E. While this substance is known to be present in several natural foods, wheat germ oil, cottonseed oil and rice germ oil have shown to be valuable sources of the vitamin for experimental purposes.

The role of vitamin E in human fertility has not been decided. Clinical data, however, indicate that it may be of therapeutic value in the correction of certain reproductive errors affecting human beings. Its greatest usefulness appears to be concerned with the prevention of

repeated spontaneous abortions. The reports dealing with the effects of wheat germ oil in therapy show that successful results have been obtained in about 80 per cent of the cases. Other clinical uses for wheat germ oil have been proclaimed but the reports pertaining thereto await confirmation. Many problems must be solved before wheat germ oil or vitamin E therapy attains a state of scientific security. At the present time the clinical use of wheat germ oil is mainly empirical. The authors conclude with a discussion of the status of the present chemical knowledge of vitamin E and the production of malignant tumors in rats by feeding certain extracts of wheat germ oil.

5. *A Study on the Excretion of Oestrogenic and Gonadotropic Hormones in the Urine and on the Concentration of Gonadotropic Hormones in the Serum of the Pregnant Sow.* E. Lozinski, G. W. Holden and E. N. Macallum. Studies previously reported by many investigators on the presence of oestrogenic and gonadotropic hormones in the body fluids and tissues of pregnant women and also those of domestic animals have yielded important information on comparative physiology and have also served to uncover valuable commercial sources for these hormones. The experiments reported in this paper were carried out to collect data on the excretion of these hormones in the urine of the pregnant sow at regular intervals during the period of gestation and on the presence of the gonadotropic hormones in the blood serum of the pregnant sow at regular intervals during the first half of the gestation period. The results obtained show that the oestrogenic hormones are excreted in the urine of the pregnant sow in small amounts and for short periods of time, two peaks being demonstrated, one at the 8th week and another at the 14th. Before, between, and after these periods no oestrogenic hormones were found. In this respect the sow differs from the pregnant woman, mare, cow and resembles the cat and the dog. For the gonadotropic hormone no significant amounts were found in the urine during the entire period of pregnancy, differing in this respect from the pregnant woman. The gonadotropic hormones were found in the blood serum of the sow during heat but these hormones promptly disappeared with conception, no significant amounts being found in the blood serum when tested at weekly intervals from the beginning of conception and for two months thereafter. In this respect the pregnant sow differs from the pregnant woman and mare in whose blood serum large amounts of these hormones may be found in the early phase of pregnancy.

6. *Some Factors that Influence Endocrine Reactions.* Edward L. Schwabe and Fredrick E. Emery. The paper consists of a discussion of previous work to a limited extent but most of the time is devoted to a consideration of experimental procedures and results which modify endocrine reactions. Some of these are: The effect of continuous treatment with pituitary grafts and extracts on the growth of the ovaries and on the estrous cycle of rats. The effect on subsequent ovarian weight induced in immature animals by a single treatment with pituitary grafts, blood serum or pregnancy. The estrus-like condition produced by frequent vaginal examination with cotton and its effect on theelin reactions. The salts of copper and zinc as related to endocrine activity. Anti-hormones reactions.

Students Graduating with High Honors

Ohio State University, College of Pharmacy. Norman H. Walt, cum laude.

University of North Carolina, School of Pharmacy. C. C. Oates, Jr., led class in scholastic excellency.

Temple University, School of Pharmacy. Thomas Andrew Walb, highest in scholastic excellency.

University of Maryland, School of Pharmacy. George Philip Hager, medal for general excellency. Kenneth Eldred Hamlin, Jr., Robert Edward Thompson and Walter Christian Gakenheimer, certificates of honor. Henry Paul Zetlin, prize for excellency of scholarship.

University of Washington, College of Pharmacy. Orville H. Miller and William Edward Farrell, magna cum laude. Lewis Arrigani and Melvin Gerald Fewel, cum laude. Arthur W. Steers, medal for excellency in scholarship. Florence Liberty Turbitt, prize for excellency in scholarship.

University of Florida, School of Pharmacy. Robert L. Benson, medal for excellency of scholarship.

Montana State University, School of Pharmacy. Joseph P. Bradley, with honors and medal for excellency of scholarship.

University of Southern California, College of Pharmacy. Darrell Lee Janzen, summa cum laude. Frank Sei Takeuchi and Isadore Sherman Talpin, cum laude. Darrell Lee Janzen, medal for highest scholastic average.

University of Colorado, College of Pharmacy. Raymond I. Arizona, medal for excellency of scholarship.

Medical College of Virginia, School of Pharmacy. Pearl Eberhard, medal for excellency of scholarship.

University of Tennessee, School of Pharmacy. Robert A. Weller, Paul A. Trillo and Roscoe H. Hinch, with honors.

Oregon State College, School of Pharmacy. Mary Parmelee Hall, medal for excellency of scholarship.

University of Pittsburgh, College of Pharmacy. Timothy J. Lucum, highest honor and medal for scholarship. Betty J. Haeckler, Vera Karel, with high honor, and William B. Strothman, with honor.

Louisville College of Pharmacy. Joe P. Frogly, Jr., medal for highest honors in chemistry. Albert Threlkeld, medal for proficiency throughout entire four years of college.

Connecticut College of Pharmacy. George Ferris and Joseph Laskarzewski, with honors.

University of Illinois, College of Pharmacy. Joseph Benedict Jancauskas, Jr., with high honors. Martin Begun, Herbert Robert Ginsberg, Martha Helen Pruszinski, Sister Mary Carl Marty and Isadore Jack Yablonsky, with honors. Joseph Benedict Jancauskas, Herbert Robert Ginsberg, Martha Helen Pruszinski, Sidney Haro'd Veaco, Jr., Sister Mary Carl Marty, Martin Begun and William Wilson Webb, excellency in scholarship.

Valparaiso University, College of Pharmacy. George H. Rodel, with high distinction.

Philadelphia College of Pharmacy and Science. Joseph Aminera, Felice J. DeMaria, Robert L. McNeil, Jr., Robley H. Millard, John H.

Millard, John M. Woodside, Jr., James W. Mitchell and Kenneth E. Sheull, distinguished scholarship. Joseph L. Ciminera, Dorothy F. Albina, James W. Mitchell, Robert L. McNeil, Jr., Felice J. DeMaria, Ralph L. Balinsky and Kenneth E. Sheull, medals and prizes.

North Pacific College of Pharmacy. Robert B. Sperry, prize for excellency in scholarship. Valerie H. Elligan, excellency in scholarship.

Purdue University, School of Pharmacy. Cornelia Mailath, Howard Hopkins and Glenn Reiff, excellency in scholarship.

South Dakota State College, Division of Pharmacy. Charles Leland Boswell, medal for excellency of scholarship.

University of Nebraska, College of Pharmacy. Floyd E. Beranek, medal for high scholarship. Robert E. Evans, prize for high scholarship.

North Dakota State College, Division of Pharmacy. Ted Samuelson, medal for excellency of scholarship.

University of Minnesota, College of Pharmacy. Louis Savage and Dorothy Brecht, excellency of scholarship.

University of South Carolina, School of Pharmacy. Abram Berry, cum laude.

University of Puerto Rico, College of Pharmacy. Samuel Rodriguez Rosado, medal for highest average in analytical chemistry for four years.

The State College of Washington, School of Pharmacy. Fred Krauel, medal for excellency of scholarship. James Booth, prize for excellency of scholarship.

Special Honors Awarded Students of Colleges of Pharmacy for Superior Scholarship During the Academic Year 1937-1938

Scholarships, Fellowships, Graduate Assistantships

UNIVERSITY OF MISSISSIPPI—James A. Richardson, Cherow, South Carolina.

OHIO STATE UNIVERSITY—Harold Conrad, graduate assistantship at Purdue University. Willard Hadley, graduate assistant at University of Minnesota. Dale Kingsley, graduate assistantship at University of Florida.

UNIVERSITY OF NORTH CAROLINA, SCHOOL OF PHARMACY—C. C. Oates, Jr., two year research scholarship given by the American Pharmaceutical Association.

UNIVERSITY OF MARYLAND, SCHOOL OF PHARMACY—Bernard L. Zeintz, Alumni Association Research Scholarship. Benjamin Samuel Levin, Charles Landon Henry Memorial Scholarship. Wooten Taylor Sumerford, the H. A. B. Dunning Research Fellowship.

UNIVERSITY OF WASHINGTON, COLLEGE OF PHARMACY—Lloyd Walter Hazelton and Louis Arrigoni, fellowships. Orville H. Miller, graduate assistantship. Elliott P. Rigsby, at the University of North Carolina.

UNIVERSITY OF FLORIDA—Fred W. Ellis, a fellowship at the University of Maryland. R. B. Smith, a scholarship at the University of Chicago.

UNIVERSITY OF SOUTHERN CALIFORNIA, COLLEGE OF PHARMACY—Donald Brodie and Albert Music, fellowships at Purdue University. Elvin Carl Schmidt, a plaque for activities.

PURDUE UNIVERSITY, SCHOOL OF PHARMACY—Howard Hopkins, graduate assistantship at the University of Nebraska, and John W. Nelson, graduate assistantship at the University of Florida.

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY—Sidney Safir and Hervey C. Parke, Park Davis fellowships.

UNIVERSITY OF NEBRASKA, COLLEGE OF PHARMACY—Lewis D. Fink, graduate assistantship.

UNIVERSITY OF MINNESOTA, COLLEGE OF PHARMACY—Louis Savage and Taito O. Soine, Minnesota State Pharmaceutical Association Graduate Fellowships. Ralph Voight, James Guertin, Curtis Waldon, Walter Fredell and Willard Hadley, teaching fellowships.

THE STATE UNIVERSITY OF WASHINGTON, SCHOOL OF PHARMACY—Howard Fricke, Teaching Fellowship at University of Pittsburgh; Stanley Middelstaedt, teaching fellowship at Purdue University; Gertrude Horn, Creta Kidder and Herman Forsland, fellowships at Washington State College.

Phi Beta Kappa Initiates

UNIVERSITY OF SOUTH CAROLINA, SCHOOL OF PHARMACY—Abram Berry.

UNIVERSITY OF SOUTHERN CALIFORNIA, COLLEGE OF PHARMACY—Herman Weiner.

UNIVERSITY OF COLORADO—Helen Woodling.

Phi Kappa Phi Initiates

UNIVERSITY OF MARYLAND, SCHOOL OF PHARMACY—Charles A. Youch.

UNIVERSITY OF SOUTHERN CALIFORNIA, COLLEGE OF PHARMACY—Mannie Smith and Darrell Lee Janzen.

OREGON STATE COLLEGE, SCHOOL OF PHARMACY—Mary Parmalee Hall and Frank R. Henry.

ALABAMA POLYTECHNIC INSTITUTE, SCHOOL OF PHARMACY—Thomas W. Robertson.

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY—R. Raymond Coles.

STATE COLLEGE OF WASHINGTON, SCHOOL OF PHARMACY—Esther Ott.

Sigma Xi Initiates

OHIO STATE UNIVERSITY, COLLEGE OF PHARMACY—Norman H. Walt, associate membership.

UNIVERSITY OF WASHINGTON, COLLEGE OF PHARMACY—Raymond Perry Ahlquist and Clifton Eugene Miller, active membership; Tordis Elizabeth Relling, Florence Liberty Turbitt, Berniece Evi Baker, Victor William Frederick, Nathan Albert Hall, Ted Albert Loomis, Edward Krupski, Edmund Emil Ehlke, Elliott Powell Rigsby, Paul Axel Tornow and Orville H. Miller, associate membership.

OREGON STATE COLLEGE, SCHOOL OF PHARMACY—Leo Y. Kuyohiro, associate membership.

IOWA STATE UNIVERSITY, COLLEGE OF PHARMACY—Roy Kenneth Snyder, active membership.

PURDUE UNIVERSITY, COLLEGE OF PHARMACY—F. J. LeBlanc, Haakon Bang, E. L. Beals, James Hunter and Lee Worrell, active membership. Donald Meridith, Helen Creech, Robert Tazucker and Gene Johnston, associate membership.

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY—Albert P. Centolella and Ferdinand B. Zienty, active membership.

UNIVERSITY OF NEBRASKA, COLLEGE OF PHARMACY—Lucile Maud Mills, active membership. Lewis D. Fink and Edwin L. Smith, associate membership.

THE STATE COLLEGE OF WASHINGTON, SCHOOL OF PHARMACY—Howard Fricke and Stanley Mittelstaedt, associate membership.

Rho Chi Initiates

UNIVERSITY OF MISSISSIPPI, SCHOOL OF PHARMACY—L. S. Begun and Ernest Eugene Puckett.

OHIO STATE UNIVERSITY, COLLEGE OF PHARMACY—Kathleen Bush, Harold Conrad, Joseph Davis, Virginia Gilliland and Fred Schlecht.

UNIVERSITY OF NORTH CAROLINA—J. H. Cameron, G. B. Kornegay and W. B. Simmons.

UNIVERSITY OF MARYLAND, SCHOOL OF PHARMACY—Walter Christian Gakenheimer, Charles Jarowski, J. Carlton Wich and Henry Paul Zetlin. Walter H. Hartung, honorary member.

UNIVERSITY OF FLORIDA, SCHOOL OF PHARMACY—A. B. Albert, Marjorie Baldwin, Robert I. Fisher, J. L. Grindstaff and Marie J. Ridenour. Frank L. Coniglio and R. H. DeBoer, alumni members.

UNIVERSITY OF SOUTHERN CALIFORNIA—Darrell Janzen, Robert Atkinson, Thomas Mayo, Setsuko Kobayashi, Kiyomi Kawamoto, Isadore Talpin, Dario Balzano, David Berman and Normal Siskel.

MEDICAL COLLEGE OF STATE OF VIRGINIA, SCHOOL OF PHARMACY—Pearl Eberhard, D. D. Cockerhan, Robert L. Richardson, Zelmon I. Blackman, D. D. Gray, Jr. and W. H. Joyner.

OREGON STATE COLLEGE, SCHOOL OF PHARMACY—Annette W. Budke, Elliott Braithwaite, Joe Y. Komoto, Ronald G. Esson, Frank R. Henry and Everett H. Newhouse.

UNIVERSITY OF WASHINGTON, COLLEGE OF PHARMACY—Tordis Elizabeth Wheeler, Florence Liberty Turbitt, Berniece Elvi Baker, Victor William Frederick, Nathan Albert Hall, Ted Albert Loomis, Edward Krupski, Edmund Emil Ehlike, Elliott Powell Rigsby, Paul Axel Tornow and Orville H. Miller.

NORTH PACIFIC COLLEGE OF OREGON, SCHOOL OF PHARMACY—Lawrence L. Wheeler, Charles Ostrofsky, Milton Olshen, Malcolm Playfair and Robert B. Sperry.

OHIO STATE UNIVERSITY, COLLEGE OF PHARMACY—Thomas R. Hughes, Marjorie Moburg, Phyllis M. Smith, Dorothy C. Gleason, Nathan F. Sorg, Harrison H. Gibbs and Thomas M. Morrison.

UNIVERSITY OF ILLINOIS, COLLEGE OF PHARMACY—Harry G. Brown, Sol J. Finke'man, Albert P. Heimsath, Sibyl V. Homann, William J. Karpel, Albert M. Keefer, Irving Kravetz, Isadore Silberman, Ben I.

Smaler, Morey J. Speivak, Isadore J. Yallonsky and Aleck Zietz. Paul D. Carpenter, Charles W. Clarke and Lewis E. Martin, alumni members.

SOUTH DAKOTA STATE COLLEGE, DIVISION OF PHARMACY—Kenneth DuBois, Robert Fisk, Gilford Gross, Harold Miller and Virgil Wibelhaus. Major James P. Murphy, U.S.A. (a graduate of Pharmacy in 1908), alumni member.

ALABAMA POLYTECHNIC INSTITUTE, COLLEGE OF PHARMACY—Jamie L. Meigs, Ruby Helen Stokes and Thomas W. Robertson.

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY—Nathan Brown and Raymond W. Hale.

THE STATE COLLEGE OF WASHINGTON, SCHOOL OF PHARMACY—Esther Ott, Theodore Schlosser, Thomas Hurley, Margaret Martin, Charlotte Gilbert and Jack Lowe.

Kappa Tau Initiates

UNIVERSITY OF MONTANA, SCHOOL OF PHARMACY—Ann Pichioni, John Crnich and Joseph P. Bradley.

Iota Sigma Pi Initiates

UNIVERSITY OF MINNESOTA, COLLEGE OF PHARMACY—Harriett Hansen and Laurine Jack.

Phi Lambda Upsilon Initiates

UNIVERSITY OF MINNESOTA, COLLEGE OF PHARMACY—Taito O. Soine, Fred C. Beardsley, active memberships. Dr. Glen L. Jenkins, honorary.

THE PEDAGOGIC REBEL

I teach—try to reach—

To my ultimate objective, not with formulas collective—

Not with methods pedagogic, nor with regimented logic.

I detest mundane statistics, and those lecture hall ballistics.

Let the Czars of Education
Take their concrete transportation,
I'll take those enchanting by-ways,
Far removed from plotted highways;
Paths of beauty through the valleys—
Paths of duty through the alleys—
I shall learn as well as teach,
I shall pray as well as preach.

And I'll make a happy landing
Sooner far than those outstanding
Exhibitionists of "Teach".

For my lads, grown men, will say
"He taught us how to watch and pray,
And live rejoicing every day."
Happy Day—O! Happy Day—

When teachers all shall teach that way!

New Books

AN INTRODUCTION TO BACTERIOLOGICAL CHEMISTRY.

By C. G. Anderson, Ph. D., D. Bact., Lewis Cameron. Teaching Fellow, Bacteriology Department, University of Edinburgh. 1938. 278 pages. William Wood and Company. Price \$4.00.

This book, though brief, makes a good survey of the biochemical relationship to bacteriology. The author in his preface makes no claims to a thorough covering of the field but has attempted to give the basic requirements in a course of this type. The book will also be of interest to the research worker who may need some information as to the metabolic behavior and chemical nature of the organisms. The book is divided into three parts, general consideration, metabolism, and aspects of immunochemistry. In an appendix he outlines methods for the isolation and identification of metabolic products. The bulk of the book is devoted to the metabolic phase of the study under which he discusses such topics as: the nutrition of autotrophic and heterotrophic bacteria, growth factors, bacterial respiration, nitrogen and carbohydrate metabolism, various phases of fermentation and the proteins, polysaccharides, lipoids, and pigments of the micro-organisms.

F. S. BUKLEY.

PHYSICAL ASPECTS OF ORGANIC CHEMISTRY.

By William A. Waters, M. A., Ph. D., Lecturer in Chemistry in the University of Durham. With an introduction by the late T. Martin Lowry, Professor of Physical Chemistry in the University of Cambridge. Second edition, 1937. 501 pages. D. Van Nostrand Company, Inc. Price \$5.75.

The authors have reviewed in a brief but concise way a considerable number of the more important physical problems of organic chemistry. The pages of this book are well provided with references to the original work of the investigators in the various fields discussed, thus enabling the reader who seeks further information to be able to locate some of the more important papers. In order to give some idea of the scope of the book the following subjects may be noted: chemical affinity, theories of molecular structures, valancy, chemical reactivity, unsaturation, free radicals, ionization and ionic reactions, reactivity of halogen compounds, hydrolysis and esterification, molecular rearrangement and conjugation. The subject has been presented in an interesting manner.

F. S. BUKLEY.

CLINICAL CHEMISTRY IN PRACTICAL MEDICINE.

By C. P. Stewart, M. Sc., Lecturer in Biochemistry, University of Edinburgh; Senior Biochemist, Royal Infirmary, Edinburgh, and D. M. Dunlop, B. A., M. D., Christison Professor of Therapeutics and Clinical Medicine, University of Edinburgh. Second edition, 1937. 372 pages. William Wood and Company. Price \$4.00.

This book, which is more suited to the clinical laboratory than the classroom, presents the subject in a clear concise form. The authors

have made an attempt to compile such biochemical procedures as have proven successful and applicable to the average clinician or practitioner. The interpretation of the results of the tests would be extremely useful to the technician whose training is usually lacking in this phase of the work. The authors have covered the following subjects in this book: the correct procedure for collection and preservation of the usual type of biological samples, basal metabolism, the procedures used in the analysis of blood samples, a chapter is devoted to glycosuria, another to albuminuria and renal functions, there are other chapters on examination of stomach contents, pancreatic and hepatic function, pregnancy tests. The authors have limited to some extent the scope of the book, but have been careful in the choice of methods of analysis. The book should be very helpful to a physician in making a diagnosis of certain pathological conditions and of value to students of pharmacy who are preparing for work as hospital technicians.

F. S. BUKY.

QUALITATIVE ANALYSIS FOR STUDENTS OF PHARMACY AND MEDICINE.

By Charles B. Jordan, Ph. C., M. E., D. Sc., Dean of School of Pharmacy and Professor of Pharmaceutical Chemistry, Purdue University, and Henry George DeKay, Ph. D., Assistant Professor of Pharmacy, Purdue University. Second Edition, 1938. McGraw-Hill Book Company, Inc., 178 pages. Price \$2.50.

The title selected for this book is somewhat inappropriate, for it cannot be considered as a specialized text for the use of students of pharmacy and medicine. Save for the theoretical discussions contained in the introduction, it is essentially a laboratory guide for systematic qualitative analysis, comparable to those in use in such courses, and equally valuable to students of pharmacy and medicine and to students of chemistry in general. When considered from this point of view, it appears to be an excellent outline, well arranged and easily followed.

The only claim which could be made for special application to pharmacy and medicine depends upon the inclusion of lists of the official chemicals and preparations of the U.S.P. XI and N.F. VI, arranged under appropriate headings. Even this has not been carried out consistently, for no lists are shown for the official acetates, chlorides, hypophosphites, iodides, nitrates, phosphates, thiocyanates, etc.

The general plan of arrangement of the first edition has been retained in the second edition, although the latter shows evidence of careful revision. The theoretical discussions of the introduction have been expanded and new material has been added. Problems involving ionization, the common ion effect and solubility products have been included. The discussion and problems dealing with hydrogen ion concentration are new. The outline for analysis is essentially the same as that of the first edition, with certain improvements in arrangement. Three procedures have been rearranged in a schematic fashion, conforming to the method of presentation of the other procedures, and contributing materially to the ease with which they may be followed. A few new tests have been adopted, such as the "Aluminum Test" for aluminum, the diphenylamine acetate test for zinc, the zinc uranyl acetate test for sodium, the perchloric acid test for potassium, the reaction of iodine and hypophosphorous acid and the reaction of manganese dioxide on

oxalates. Twelve new review questions have been added to the extensive list of the first edition, and two new paragraphs, dealing with the detection of iron and the metals of Group III in the presence of phosphates have been added. A list of unfinished chemical equations has been included as an aid to the student in reviewing.

In general it may be said that this book has much to commend it to students and teachers of qualitative analysis. It is well organized and arranged, the style is clear and concise, and it compares favorably with other texts in general use. It should be equally valuable as a reference book, or as a textbook in courses in qualitative analysis, wherever they may be taught.

JOSEPH B. BURT.

HANDBOOK OF HYGIENE.

By Joseph W. Bigger, M. D., Sc. D., P. P. H., Professor of Bacteriology and Preventive Medicine, University of Dublin, 1937. William Wood and Company. 405 pages, 18 illustrations. \$4.00.

The author first takes up a study of vital statistics and follows with a study of communicable diseases, grouping them according to the part affected and route of infection. Later chapters discuss the carriers of disease and the problem of pollution of water and of food. A chapter on the discussion of diseases of unknown and uncertain etiology is valuable in that it gives accurately the present status of our knowledge. Chapters on waste disposal, occupational hygiene, and poisonous gases add much to the value of the book. The last three chapters deal with maternity, infant care, and hygiene, personal hygiene and the assessment of normal health, while not extensive, do give a fine scientific statement of facts that people need to be set right upon. The book is fascinatingly written and while it was written for medical students, it gives the pharmacy student the basic facts which pharmacists should know as a part of the national public health structure. Pharmacy colleges giving courses in public health should investigate this book.

RUFUS A. LYMAN.

AMERICAN POCKET MEDICAL DICTIONARY.

By W. A. Newman Dor'and, A. M., M. D. Members of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; Editor of the "American Illustrated Medical Dictionary." Sixteenth Edition, 1938. 973 pages. W. B. Saunders Company. Price \$2.00; thumb indexed, price \$2.50.

The Dorland dictionaries are so well known they hardly need to be commented upon here. This edition gives brief, concise, yet adequate definitions of more than 50,000 technical terms which include 2,500 new words covering the recent ones introduced in the fields of allergy, dietetics, *materia medica* and endocrinology, nursing technique, physical therapy, psychiatry, surgery and the related fields of medical science. It is just as essential for the student of pharmacy to have constant access to a medical dictionary as it is for a student in other branches of the medical sciences, and a real service can be rendered the pharmaceutical student by urging him to have such a dictionary as the present edition a part of his working library.

RUFUS A. LYMAN.

WHEELER AND JACK'S HANDBOOK OF MEDICINE.

Revised by John Henderson, M. D. Tenth Edition, 1937. 703 pages, 27 illustrations. William Wood and Company. Price \$4.00.

A handbook that runs through ten editions with a constant increase in its popularity with the practitioner of medicine is evidence of its value. The present edition is revised to date and covers in a concise way the anatomy and physiology of the organs involved and the etiology, the pathological physiology, the pathology, the diagnosis, and the treatment of each disease discussed. Practically the whole field of human diseases is covered. The authors call attention especially that this is a handbook and not a textbook. Its value lies in the fact that it in a brief form gives the true status of the knowledge of disease at the time of publication. Such a book is of great value to the pharmacy student and the pharmaceutical practitioner, not in order to make him a practitioner of medicine, but to make him a better pharmacist and enable him to give more intelligent advice to his patron with reference to neglect of disease. Druggists would be better druggists if they could read border-line medical literature more intelligently, just as doctors would be better doctors and prescribe more intelligently if they had more pharmaceutical knowledge.

RUFUS A. LYMAN.

A MANUAL OF PHARMACOLOGY.

By the late Walter E. Dixon, sometime Professor of *Materia Medica* and *Pharmacology* at King's College, London, revised by W. A. M. Smart, Lecturer in *Pharmacology* and *Toxicology*, London Hospital Medical College. Eighth Edition, cloth. 483 pages, 79 illustrations. William Wood & Company, Baltimore, 1936. Price \$6.50.

The eighth edition of the wellknown British textbook in *Pharmacology* by the late Professor W. E. Dixon has been completely revised by Dr. W. A. M. Smart. In view of this change in authorship, it is but natural that the point of view has become changed so as to lay more stress upon organic chemistry and its part in pharmacological research. Undoubtedly the addition of numerous sample prescriptions are of great value to the medical as well as the pharmaceutical student; the author expresses strong personal preference for adopting the metric system; may one who cherishes a similar hope expect that future editions will change so as to have the vast majority of the prescriptions in the metric system? In addition to giving more elaborate discussions of the general features of the major drugs, the book also includes briefer mention of more recent accepted advances in new drugs and treatments. Numerous chemical formulae, many clear records of experiments and pictures of bodily structures and parasites help the reader to a better understanding of the text material. In some instances the author also has sought counsel from other leading British pharmacologists so as to make certain chapters more authoritative. The quite elaborate *materia medica* limits itself to the British dosage; this makes it somewhat difficult to use this book as a general text in courses in pharmacology on this side of the Atlantic. However, this *Pharmacology* is one that the reviewer had already secured for his school library, and he believes it would be of value to the library of any college of pharmacy.

H. G. O. HOLCK.

TEXTBOOK OF CLINICAL PATHOLOGY.

Edited by Roy R. Krache, B. S., M. D., Professor of Pathology, Bacteriology and Laboratory Diagnosis, Emory University. 1938. 567 pages. 31 colored plates. 205 illustrations. William Wood and Company. Price \$6.00.

Twelve scientists, distinguished in their respective fields, have collaborated in the production of this book. The Editor speaks sanely when he says in the preface of the book, "The subject of clinical pathology or laboratory diagnosis is interwoven so closely with general medicine, especially in the interpretation of results, that it is impossible for one person to prepare a comprehensive work on the entire subject." And again, "This is not intended to be a book of laboratory technique, but emphasis is placed on interpretation of results and their application to the problems of diagnosis. It is far more important for students of medicine to know the significance of achlorhydria than the technique of its determination. Especially is this true in modern times when most of the laboratory work is carried out by non-medical personnel". The reviewer contends that better technical work will be done when the technician understands the clinical significance of the findings. This book should be in every pharmacy college library and those pharmacy students taking courses in laboratory technician work should have constant access to it. As a laboratory book it is adequate. The colored plates are excellent and the illustrations showing laboratory methods, especially those dealing with animal experimentation, are worthy of commendation because of their clearness.

RUFUS A. LYMAN.

EMOTIONS AND THE EDUCATIVE PROCESS.

By Daniel Alfred Prescott. Ed. D., Chairman. Professor of Education, Rutgers University. 1938. 323 pages. American Council on Education. Price \$1.50.

This book constitutes the report of the Committee on the Relations of Education to the Educative Process of the American Council on Education. It is an exploratory study of the relationship of non-intellectual factors and the aims, methods, material, and personnel involved in education. It opens the question of the responsibility of the school for guidance of students to affective life maturity. Every chapter is crammed full of information which leads a teacher to a better understanding of his problems as a teacher in relation to his student. The statement that "A significant proportion of the country's teachers either are mentally ill or suffer from serious mental and emotional maladjustments," may be taken as applying to teachers on the professional level as well as in the public schools. Teachers in schools of pharmacy will profit by thinking through the problems presented in this book by the Committee.

RUFUS A. LYMAN.

A TEXTBOOK OF PHYSIOLOGY.

By William D. Zoethout, Ph. D., Professor of Physiology in the Chicago College of Dental Surgery. (Loyola University.) Sixth edition 1938. 714 pages. 291 illustrations. The C. V. Mosby Company. Price \$4.00.

The issuance of the sixth edition attests to the continued popularity of this text. To incorporate the most recent discoveries the chapter on Hormones and Vitamins has been written. The chapter on the circulation has been revised in order to obtain a more closely coordinated structure.

RUFUS A. LYMAN.

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

(Continued from Inside Front Cover)

NEBRASKA

Creighton University, College of Pharmacy, Omaha; William A. Jarrett, Dean (1916).

University of Nebraska, College of Pharmacy, Lincoln; Rufus A. Lyman, Dean (1912).

NEW JERSEY

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark; Ernest Little, Dean (1928).

North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill; J. Grover Board, Dean (1917).

North Dakota

North Dakota Agricultural College, School of Pharmacy, Fargo; William F. Sudro.

Ohio

Ohio Northern University, College of Pharmacy, Ada; Rudolph H. Baetz, Dean (1925).

Ohio State University, College of Pharmacy, Columbus; Clair A. Dre, Dean (1909).

Western Reserve University, School of Pharmacy, Cleveland; Edward Spears, Dean (1902).

Oklahoma

University of Oklahoma, School of Pharmacy, Norman; David B. B. Johnson, Dean (1905).

Oregon

Oregon State Agricultural College, School of Pharmacy, Corvallis; Adolph Zieffle, Dean (1915).

North Pacific College of Oregon, School of Pharmacy, Portland; Anton O. Michelsen, Dean (1914).

Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh; Hugh C. Meldoun, Dean (1927).

Philadelphia College of Pharmacy and Science, Philadelphia; Iver Griffith, Dean (1906).

Temple University, School of Pharmacy, Philadelphia; H. Evert Kendig, Dean (1925).

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh; C. Leonard O'Connell, Dean (1909).

Philippines

University of the Philippines, College of Pharmacy, Manila; Mariano V. de los Santos, Dean (1915).

Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras; Lucas G. Viera, Dean (1925).

Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence; W. Henry Rivard, Dean (1926).

South Carolina

University of South Carolina, School of Pharmacy, Columbia; Emery T. Motter, Dean (1928).

South Dakota

South Dakota State College, Division of Pharmacy, Brookings; Earl R. Berney, Dean (1928).

Tennessee

University of Tennessee, School of Pharmacy, Memphis; Robert L. Crowe, Dean (1914).

Texas

University of Texas, College of Pharmacy, Austin; William P. Gidley, Dean (1926).

Virginia

Medical College of Virginia, School of Pharmacy, Richmond; Worley F. Ryall, Dean (1926).

Washington

University of Washington, College of Pharmacy, Seattle; Charles W. Johnson, Dean (1925).

State College of Washington, School of Pharmacy, Pullman; F. H. Diratine, Dean (1922).

West Virginia

West Virginia University, College of Pharmacy, Morgantown; J. Lester Hayman, Director (1920).

Wisconsin

University of Wisconsin, School of Pharmacy, Madison; Arthur H. Uhl, Director (1900).